

Glenmont



June 2015

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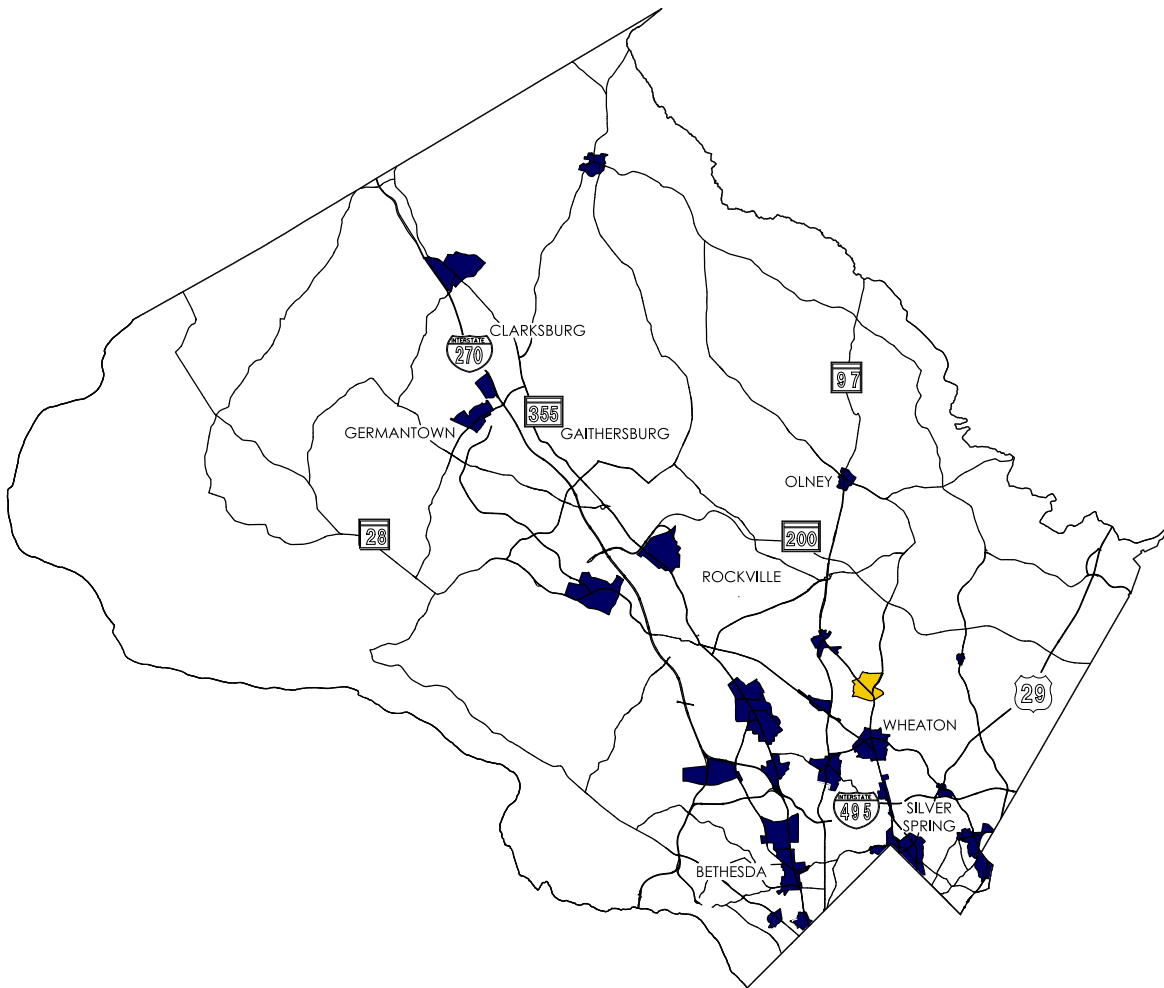
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Executive Summary





EXECUTIVE SUMMARY

A Bicycle and Pedestrian Priority Area (BiPPA) is a geographical area where the enhancement of bicycle or pedestrian traffic is a priority. The objective of BiPPA is to enhance safe bicycle and pedestrian access to support cohesive neighborhoods, aging infrastructure, and improve long-range connectivity and circulation.

In 2013, the Maryland National Capital Parks and Planning Commission designated twenty-eight bicycle and pedestrian priority areas within Montgomery County. The Montgomery County Department of Transportation (MCDOT), in partnership with the State Highway Administration (SHA) and the Maryland-National Capital Park and Planning Commission (M-NCPPC), identified improvements to be made to five (Glenmont, Grosvenor-Strathmore, Silver Spring CBD, Veirs Mill Road-Randolph Road, Wheaton CBD) of the designated twenty-eight bicycle and pedestrian priority areas. This was done through public workshops, which allowed the department to understand the diverse concerns and opinions of the stakeholders and residents.

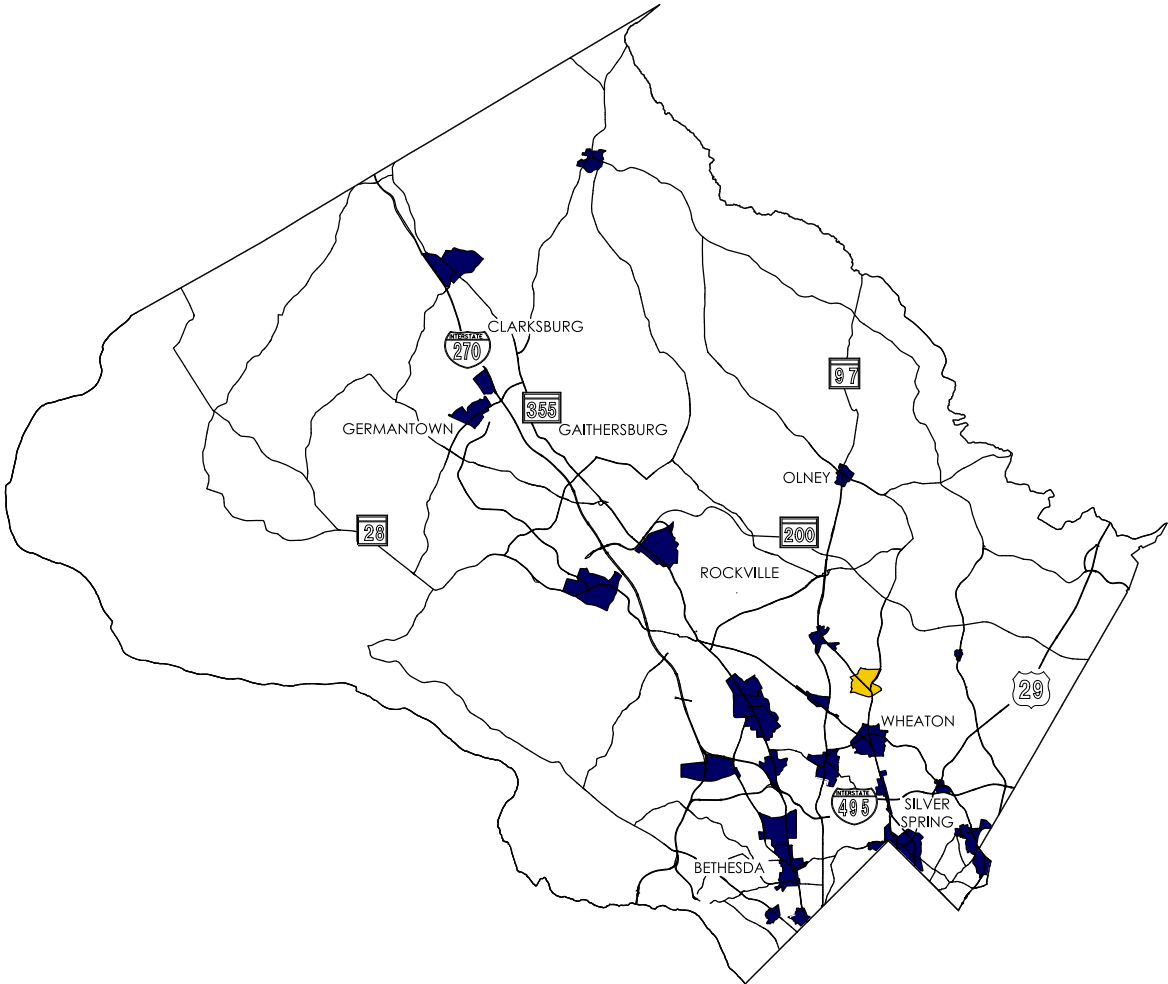
This report was prepared specifically for the Glenmont BiPPA based on the collaboration of agency officials, community stakeholders, planners, engineers, and specialists in geographic information systems (GIS). An initial summary of master plan recommendations was progressed by the team, followed by field investigations, and the development of this report. All state, county, and municipal rights of way were included in the study. Recommendations were then prioritized based on benefits, impacts, timeframe, and cost.

Generally, improvements were evaluated based on three primary factors: priority, timeframe, and cost. Priority is based on the ratio of benefits to impacts. Each improvement was assigned to a timeframe category: Short-term (1 – 2 years), Mid-term (2 – 5 years), Long-term (5+ years). Similarly, each improvement was assigned an order of magnitude cost ranging from less than \$10,000 to greater than \$5,000,000.

Please refer to Table 5 for a summary of recommended priority improvements listed.

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Introduction





INTRODUCTION

Montgomery County is the most populous and one of the most diverse counties in Maryland. Our population exceeds one million residents and continues to grow. With such a large population, the Montgomery County Department of Transportation must address the varied transportation needs of all its residents, which is why BiPPA was created. The Montgomery County Department of Transportation considers bicycle and pedestrian facilities a critical component in the County's transportation infrastructure network. Bicycling and walking facilities provide a wide range of benefits to individuals, their communities, and the surrounding environment.

In urban areas, there are traditionally higher percentages of people of color, people with low income, and seniors – all are residents that put a greater share of their budget toward transportation. In such areas, walking and bicycling are among the most affordable forms of transportation. Therefore, providing safe, convenient, and attractive bicycle and pedestrian access – along with modernizing existing aging infrastructure – is essential to ensure equity for all transportation users and their access to jobs, public services, and social network.

Collectively, we can help decrease traffic congestion, air pollution, and enhance quality of life.

The goals of bicycle and pedestrian priority improvements are to engage the surrounding community for feedback to identify and develop recommendations for the area. These recommendations include upgrading aging infrastructure, improving safety, and improving long-range connectivity and circulation. This report provides recommendations for the design and construction of bicycle and pedestrian improvements within the bicycle and pedestrian priority areas that enhance and promote accessibility, safety, mobility, and comfort for bicyclists and pedestrians as voiced by the public.



STUDY AREA - GLENMONT

The Glenmont Bicycle and Pedestrian Priority Area (BiPPA) boundary was designated by the M-NCPPC in 2013, in accordance with Section 2-604 of the Annotated Code of Maryland, which delegates this responsibility to local jurisdictions. The 0.5-square mile area is centered on the Glenmont Metro-Rail station and is enclosed by Randolph Road (CO 1659) to the south; Weller Road (CO 1564) and Briggs Road (CO 126) to the north; MD 182 (Layhill Road) and Glenallan Avenue (CO 1114) to the east; Holdridge Road, Farnell Drive, Gould Road, and Denley Road (CO 1344) to the west. The area is bisected by MD 97 (Georgia Avenue).

The broader Glenmont area is an unincorporated community in Montgomery County, Maryland, typically associated with the terminus of the Washington Metro-Rail System's Red Line and its southerly neighbors, Wheaton and Silver Spring. Based on the 2010 Census, the area's population is estimated at 13,529 within a 2.80 square mile land area. The area is characterized by typical suburban residential (mostly single family homes and garden apartment complexes) development, commercial development, transit infrastructure, as well as: parks, rolling terrain, and small streams. John F. Kennedy High School and Glenallan Elementary School are located to the east. Wheaton High School, Loiederman Middle School, and Weller Road Elementary School are located to the west. Other points of interest include the Glenmont Greenway Urban Park, Glenfield Park, Glenmont Local Park, Saddlebrook Park, and Georgian Forest Park. Wheaton Regional Park is located to the southeast. The Glenmont Shopping Center, a large 20-acre, commercial development, is located at the intersections of MD 97, MD 182, and Randolph Road. Pedestrian and bicycle access to this shopping center is poor and although this site has the potential to become the area's town center, there is no timeframe for redevelopment.

Sidewalk connectivity throughout the area is good, however; bicycle connectivity is poor. On-street parking is common along the county's major roadways and residential local roads. However, parking in the Georgia Avenue West single family neighborhood, adjacent to the Glenmont Metro-Rail station is by permit only from 9 am – 5 pm, Monday thru Friday.

There are heavy traffic volumes in the peak hour and direction along MD 97, MD 182 and Randolph Road. The grade separation of MD 97 and Randolph Road is a major SHA project currently under construction.



- Metro Station
- BiPPA Boundary

Figure 1 – Glenmont Bicycle and Pedestrian Priority Area





GEORGIA AVENUE (MD 97) CORRIDOR

Georgia Avenue (MD 97) is an SHA-maintained, north-south roadway through the Glenmont BiPPA. MD 97 is a 6-lane, divided roadway with a posted speed limit of 35 MPH from Randolph Road to Ara Drive (CO 2774) and 45 MPH from Ara Drive to Weller Road. MD 97 is a closed section and is classified by the SHA as an Urban Other Principal Arterial on the secondary state system. Existing right of way widths vary from 100 – 120 feet. There are existing sidewalks with tree panels along both sides of the roadway. The median is also typically planted with trees and grass. Aerial utilities line both sides of the roadway, with street lighting provided by cobrahead luminaires mounted on the utility poles. The pavement appears to be a composite section (asphalt wearing course over concrete base).

The Glenmont Greenway runs parallel to the west side of MD 97 from Randolph Road to Glenallan Avenue. There are no on-road bicycle facilities.

LAYHILL ROAD (MD 182) CORRIDOR

Layhill Road (MD 182) is a SHA-maintained, north-south roadway through the Glenmont BiPPA. MD 182 is a 6-lane divided roadway from MD 97 to the Glenmont rail yard entrance and a 4-lane divided roadway with a bike lane in each direction from the Glenmont Rail Yard to Briggs Road. MD 182 has a 30 MPH speed limit from MD 97 to the Glenmont rail yard and a 40 MPH speed limit from the Glenmont Rail Yard to Briggs Road. MD 182 has a closed section and is classified by the SHA as an Urban Other Principal Arterial on the secondary state system. There are existing sidewalks on both sides of the roadway. Street lighting is located along southbound MD 182, mounted on existing utility poles by cobra luminaires.

RANDOLPH ROAD CORRIDOR

Randolph Road is an MCDOT-maintained roadway through the Glenmont BiPPA, oriented primarily in an east-west direction and with a posted speed limit of 35 MPH. Randolph Road is a 6-lane divided roadway that has a closed section. Existing street lighting for both sides of Randolph Road is provided by cobrahead luminaires on utility poles. Parking is allowed along the outside travel lane during non-peak hours. There are numerous residential driveway aprons along Randolph Road west of MD 97. Randolph Road is currently listed as a shared roadway on the 2013 Glenmont Sector Plan.

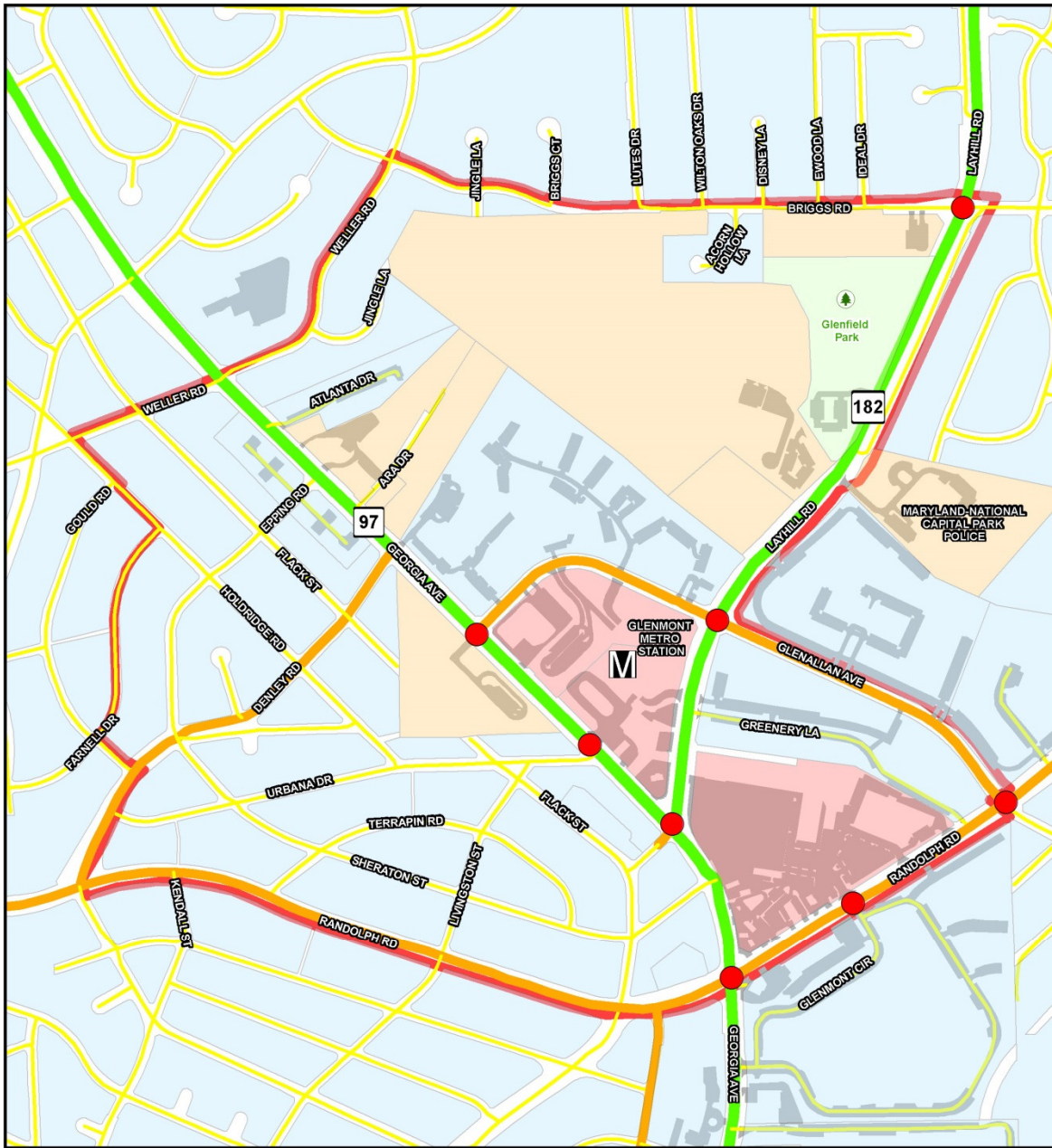
GLENALLAN AVENUE CORRIDOR

Glenallan Avenue is an MCDOT-maintained roadway through the Glenmont BiPPA, oriented primarily in an east-west direction with a posted speed limit of 30 MPH. Glenallan Avenue is a 5-lane, undivided closed section roadway from MD 97 to MD 182. From MD 182 to Randolph Road, Glenallan Avenue is a two-lane, undivided, closed section roadway with on-street parking on both sides. Existing lighting is provided by poles with mast arms on both sides of Glenallan

Avenue from MD 97 to MD 182. Street lighting is provided by luminaries on utility poles along westbound Glenallan Avenue from MD 182 to Randolph Road and 10-ft poles along eastbound Glenallan Avenue from MD 182 to Randolph Road.

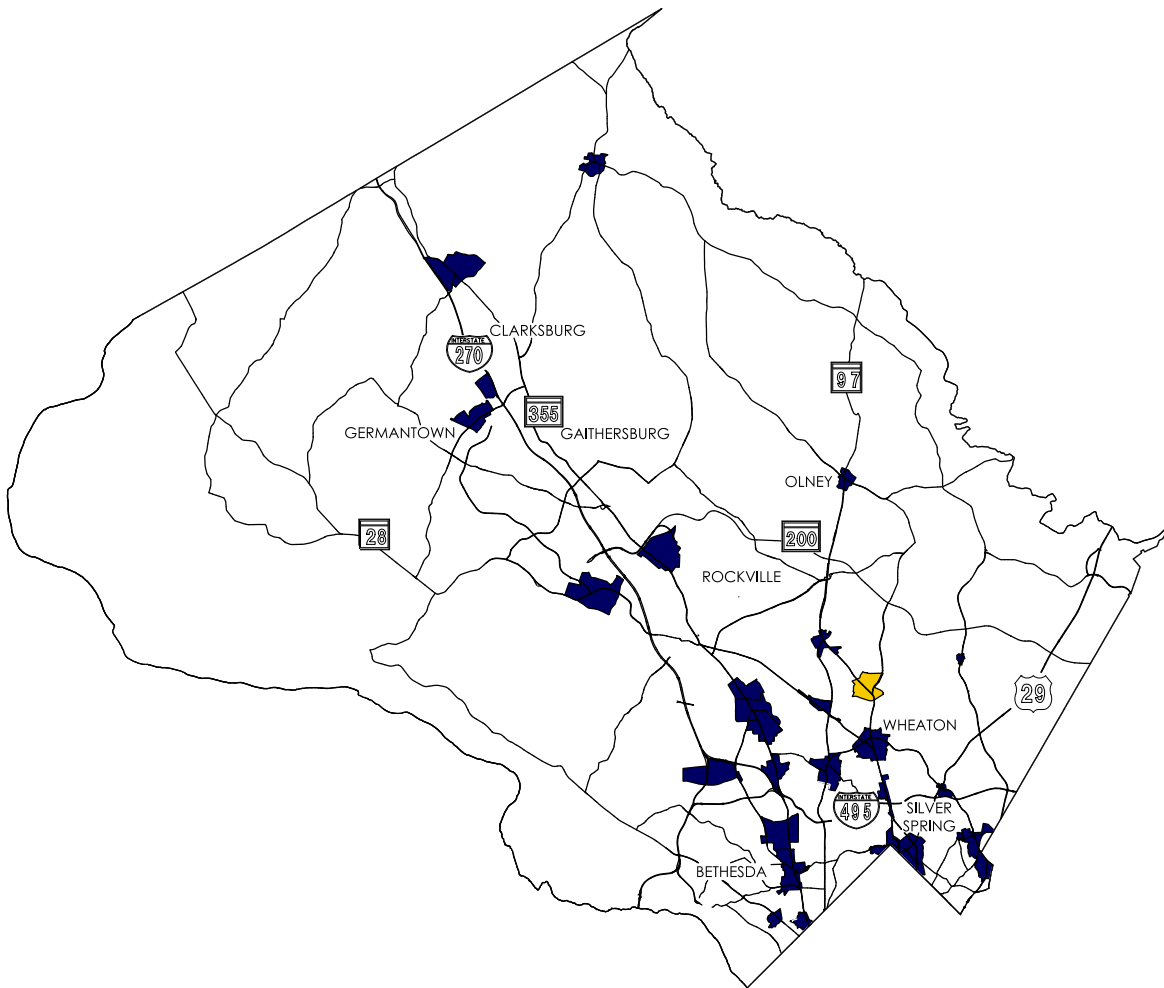
The following is summary of existing major roadways within the Glenmont BiPPA:

Table 1 – Existing Roadway Summary						
Roadway	From	To	AADT as of 2013	Posted Speed Limit	Classification	Owner
Briggs Road	MD 182 (Layhill Road)	Lutes Drive	-	25 MPH	Primary Residential (Mod 2002.3)	MCDOT
Denley Road	MD 97 (Georgia Ave)	Randolph Road	-	25 MPH	Primary Residential (2002.3)	MCDOT
Georgia Avenue (MD 97)	Weller Road (North)	Randolph Road (South)	44,102 @ Randolph Road 35,052 @ Layhill Road	35 MPH/45 MPH	Urban Other Principal Arterial	SHA
Glenallan Avenue (CO 1114)	Randolph Road (East)	Georgia Avenue (West)	-	30 MPH	Arterial	MCDOT
Judson Road	Randolph Road	Lindell Street	-	25 MPH	Primary Residential (Mod 2002.3)	MCDOT
Layhill Road (MD 182)	Briggs Road (North)	Georgia Avenue (South)	18,770 @ Georgia Avenue 17,932 @ Glenallan Avenue 22,910 @ Briggs Road	30 MPH / 40 MPH	Urban Other Principal Arterial	SHA
Randolph Road (CO 1659)	Glenallan Avenue (East)	Denley Road/Lindell Street (West)	-	35 MPH	Arterial	MCDOT
Weller Road	Holdridge Road	MD 97 (Georgia Ave)	-	25 MPH	Primary Residential (Mod 2002.3)	MCDOT



Glenmont

Master Plan Recommendations, Other Studies, and Planned Projects





MASTER PLAN RECOMMENDATIONS, OTHER STUDIES, AND PLANNED PROJECTS

MASTER PLAN RECOMMENDATIONS

Countywide Transit Corridors Functional Master Plan (December 2013)

The Countywide Transit Corridors Functional Master Plan recommends implementation of a Bus Rapid Transit (BRT) system, with dedicated transit lanes and signal priority, throughout Montgomery County. The proposed Georgia Avenue North corridor would pass through the Glenmont BiPPA. The proposed Randolph Road corridor would run along the south boundary of the Glenmont BiPPA and intersect with the Georgia Avenue North corridor (see figure 3 below). Stations are proposed for the Glenmont Metro Station, MD 97 / Randolph Road, and Randolph Road / Glenallan Avenue. The master plan also recommends overall pedestrian safety, accessibility, and mobility recommendations along the proposed BRT routes. The recommendations from the master plan are listed in Table 2 below.

Countywide Bikeways Functional Master Plan (March 2005)

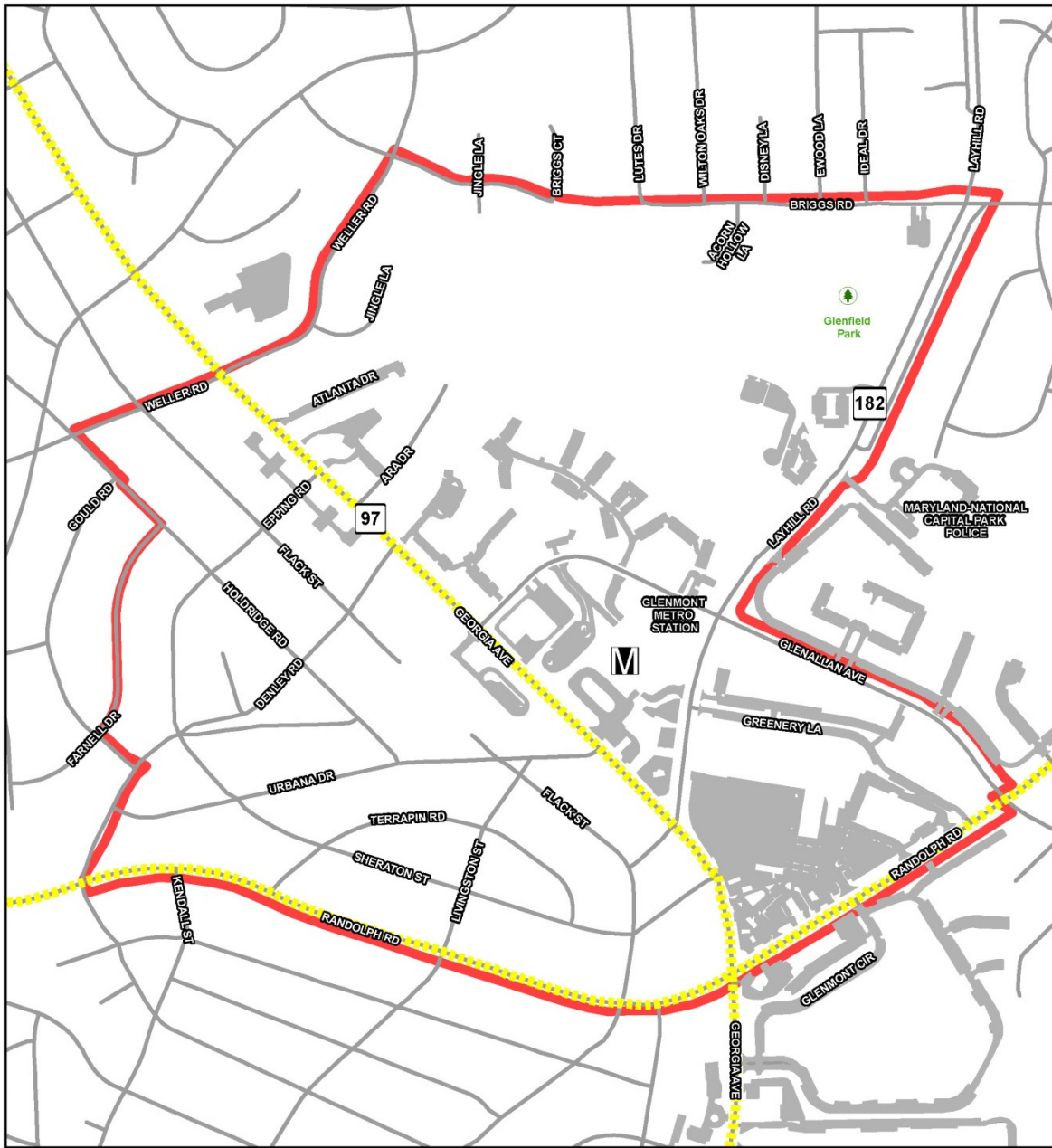
According to the Countywide Bikeways Functional Master Plan (March 2005), the following routes are either designated as existing or proposed bicycle facilities through the Glenmont BiPPA:

1. Georgia Avenue (MD 97) - Shared Use Path / Off-Road (Class 1) Proposed
2. Layhill Road (MD 182) - Bike Lanes / On-Road (Class 2) Existing
3. Randolph Road - Shared Use Path / Off-Road (Class 1) Proposed

Glenmont Sector Plan (December 2013)


The M-NCPPC Glenmont Sector Plan recommended designating the Glenmont area as a bicycle and pedestrian priority area. The plan provides recommendations for pedestrian circulation and the bikeway network. Table 2, below, provides summary of these recommendations.

The plan also recommends reconfiguring the southern portion of Layhill Road to create a T-intersection with Georgia Avenue, eliminating the current free rights at the northbound and southbound lanes of Layhill Road while retaining the exclusive right-turn lane for northbound Georgia Avenue to northbound Layhill Road. Additionally, the plan proposes reducing the number of through lanes on Layhill Road between Glenallan Avenue and Georgia Avenue from six lanes to four lanes.



M Metro Station ■■■■■ BRT Route
■ BiPPA Boundary

Figure 3 – Planned Bus Rapid Transit Routes



OTHER STUDIES

WMATA Capital Improvement Plan 2012-2017

The WMATA Capital Improvement Plan 2012-2017 is focused on improving access, safety, and mobility around the Glenmont Metro station. The recommendations from this report are listed in Table 3.

Randolph Road and Livingston Street

Currently, there is a crosswalk on the west side of the Randolph Road and Livingston Street intersection. This intersection has also seen focused pedestrian safety efforts by the Montgomery County Police Department (MCPD). In the past, MCPD has conducted a number of operations at locations with marked crosswalks and areas that have been identified as pedestrian High Incidence Areas (HIAs) -- those with more pedestrian collisions. MCPD has issued citations to drivers who are breaking the law by not yielding to pedestrians in the crosswalk.

As part of traffic study performed for the MD 97/Randolph Road intersection project, a signal warrant analysis was completed at this intersection. Conclusions from the report are listed below.

1. Based on the results of the signal warrant analysis, a signal is not warranted at the intersection of Randolph Road and Livingston Street under existing conditions. If the Randolph Road median is closed at Judson Road, thereby diverting left and through traffic to Livingston Street, Warrant #3 would be met and Warrant #2 would be nearly met. Warrant #2 is met when Livingston Street has volumes of 60 vph or more for 4 hours. Three hours satisfy this requirement; in the 4th hour Livingston Street is 4 vehicles short of meeting this warrant.
2. According to the MUTCD, Warrant 3 shall only be used to warrant a signal in unusual cases, such as at office complexes, manufacturing plants, or industrial complexes that attract or discharge large numbers of vehicles over a short time. Although Warrant #2 does not technically meet the minimum requirements, consideration may be given to installing a signal at this intersection under the proposed conditions, since it is nearly met.
3. An analysis of intersection operations under the proposed scenario with a traffic signal was performed using Synchro. The analysis showed that the intersection would operate at LOS B in the AM and PM peak periods (see Appendix for the worksheets). *If a traffic signal is installed; the left turn lane length on Randolph Road at Livingston Road should be increased to provide 150feet of storage.* If a traffic signal is not installed and the median at Judson Road is closed, the left-turn lane length should be increased to provide 75 feet of storage.

The 'Pedestrian Circulation and Bikeway Network' section of the 'Approved and adopted Glenmont Sector Plan', dated December 2013 recommends that "MCDOT should perform a traffic signal warrant study to determine the feasibility of a traffic signal at this intersection."



PLANNED PROJECTS

Georgia Avenue (MD 97) and Randolph Road

The Georgia Avenue (MD 97) and Randolph Road intersection is located along the southern boundary of the BiPPA. Currently, this intersection is being reconstructed by the SHA and includes lowering Randolph Road nearly 25 feet to route through traffic under MD 97. New turn lanes and ramps will provide turning movements. The project also includes the addition of one through lane along MD 97 for a total of three through lanes in each direction through the interchange. Other improvements include a 900 foot extension of the Glenmont Greenway Trail on the west side of MD 97 between Randolph Road and Mason Street and adding new sidewalks and pedestrian ramps within the project limits on both MD 97 from Mason Street to MD 182 and Randolph Road from Judson Road to east of Glenmont Circle.

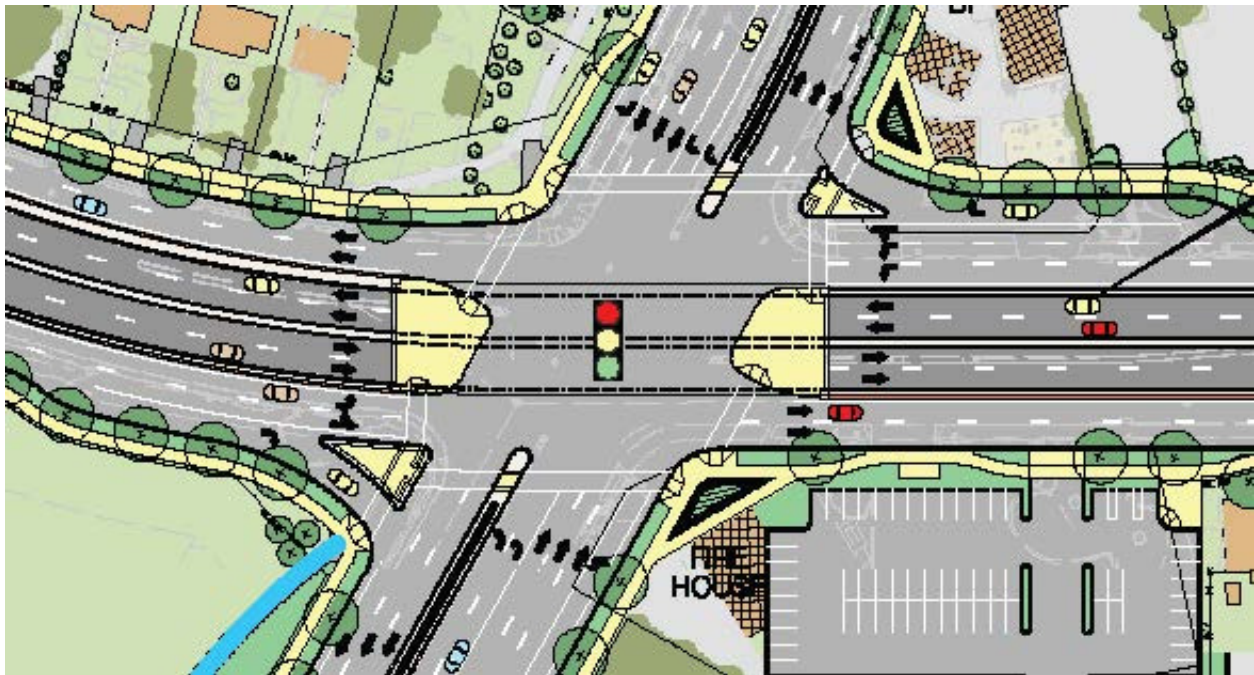


Figure 4 – Georgia Ave (MD 97) and Randolph Rd Grade Separation Project – Under Construction

Glenmont Metro-Center

The 30.9-acre Glenmont Metro-Center site, located north of the Metro station on Glenallan Avenue, is zoned TS-R Zone (Transit Station-Residential) and currently developed with 352 garden apartments. The Glenmont Metro-Center property has received preliminary plan subdivision approval by the Montgomery County Planning Board in September of 2013. Formerly referred to as "Privacy World", the redevelopment should utilize compact building footprints and structured parking. Along Glenallan Avenue a 10-foot-wide "shared-use path" for walkers and cyclists is proposed. Currently there is no start date for construction.

Table 2 – Summary of Master Plan Recommendations

Item No	Corridor	Jurisdiction	Improvement Type	Description	Reference
1	Area Wide	MdSHA/Montgomery County	Sidewalk	Improve sidewalks to have a minimum width of 6' along BRT's	Countywide Transit Corridors Functional Master Plan
2	Area Wide	MdSHA/Montgomery County	Curb Ramp; Sidewalk	Construct landscape buffers of sufficient width to achieve sidewalks and handicap ramps that meet ADA best practices along BRT's	Countywide Transit Corridors Functional Master Plan
3	Area Wide	MdSHA/Montgomery County	Bicycle	Construct 5.5' bike lanes along Georgia Avenue (MD 97), Randolph Road, Glenallan Avenue	Countywide Transit Corridors Functional Master Plan
4	Briggs Road	Montgomery County	Shared Use Path	Shared use path from Briggs Court to Layhill Road	Glenmont Sector Plan (December 2013)
5	Briggs Road	Montgomery County	Bicycle	Signed shared roadway from Weller Road to Briggs Court	Glenmont Sector Plan (December 2013)
6	Briggs Road	Montgomery County	Bicycle	Signed shared roadway from Layhill Road to Middlevale Lane	Glenmont Sector Plan (December 2013)
7	Flack Connector	Montgomery County	Shared Use Path	Shared use path from Flack Street to Glenmont Greenway	Glenmont Sector Plan (December 2013)
8	Flack Street	Montgomery County	Bicycle	Signed shared roadway from Weller Road to Flack Connector	Glenmont Sector Plan (December 2013)
9	Georgia Avenue (MD 97)	MdSHA	Bicycle	Construct a cycle track along Georgia Avenue (MD 97) from Weller Road to Glenallan Road (Part of larger MD 97 cycle track system)	Countywide Transit Corridors Functional Master Plan
10	Georgia Avenue (MD 97)	MdSHA/Montgomery County	All	Re-Construct Georgia Avenue (MD 97), Randolph Road and Layhill Road (MD 182) into boulevards with enhanced medians, wider sidewalk, tree panels bikeway improvements and better pedestrian crossings	Glenmont Master Plan
11	Georgia Avenue (MD 97)	MdSHA	Bicycle	Bike lanes from Weller Road to Mason Street	Glenmont Sector Plan (December 2013)
12	Georgia Avenue (MD 97)	MdSHA	Shared Use Path	Shared use path from Weller Road to Denley Road	Glenmont Sector Plan (December 2013)
13	Georgia Avenue (MD 97)	MdSHA	Shared Use Path	Shared use path from Denley Road to Mason Street	Glenmont Sector Plan (December 2013)
14	Glenallan Avenue	Montgomery County	Shared Use Path	Shared use path from Georgia Avenue to Randolph Road	Glenmont Sector Plan (December 2013)

Table 2 – Summary of Master Plan Recommendations

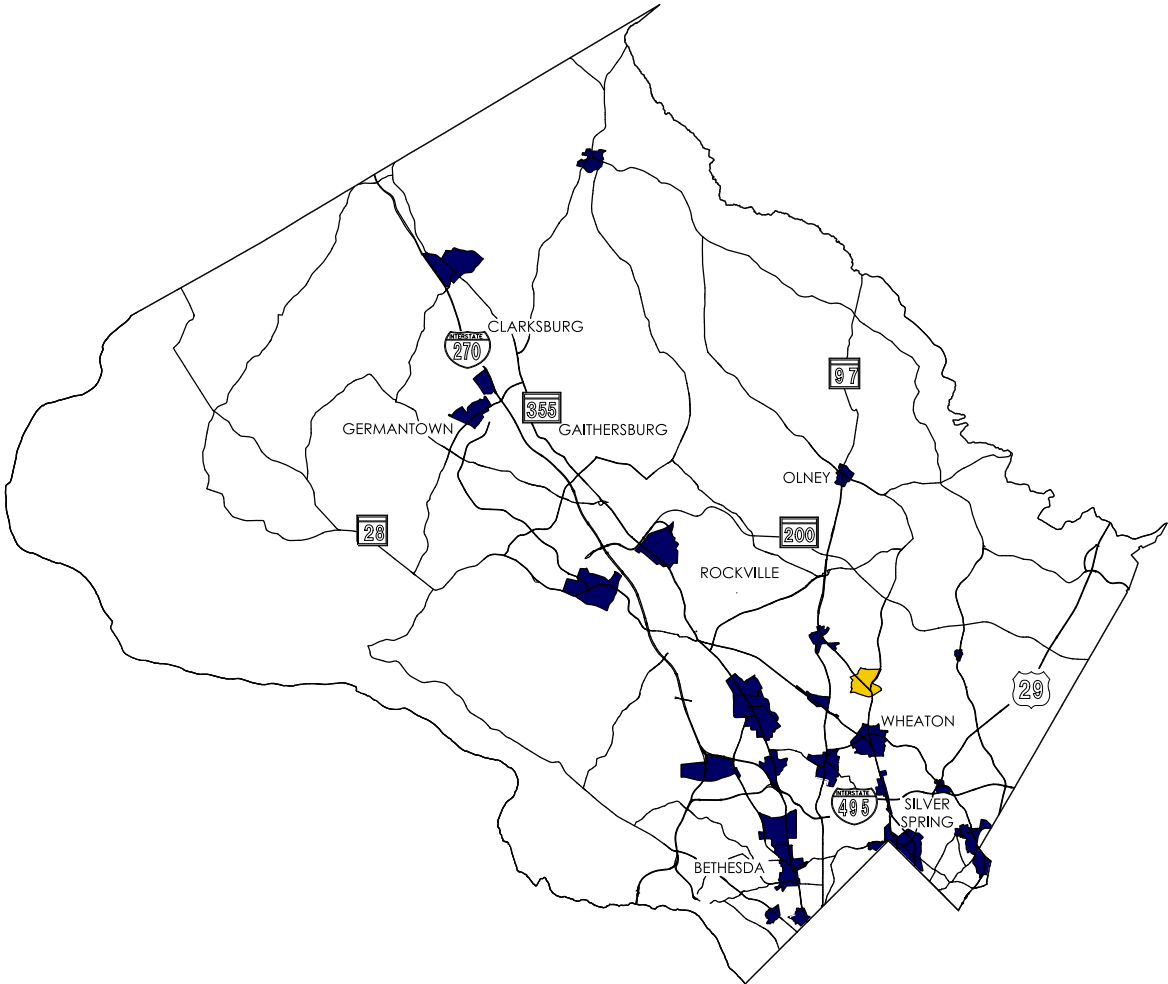
Item No	Corridor	Jurisdiction	Improvement Type	Description	Reference
15	Glenmont Forest Connector	Montgomery County	Shared Use Path	Shared use path from Randolph Road to Wheaton Regional Park-Off Road Path	Glenmont Sector Plan (December 2013)
16	Grandview Avenue	Montgomery County	Bicycle	Signed shared roadway from Randolph Road to Mason Road	Glenmont Sector Plan (December 2013)
17	Jingle Connector	Montgomery County	Shared Use Path	Shared use path from Jingle Lane to Jingle Lane	Glenmont Sector Plan (December 2013)
18	Layhill Road (MD 182)	MdSHA	Bicycle	Bike lanes from Georgia Avenue to Hathaway Drive	Glenmont Sector Plan (December 2013)
19	Livingston Street	Montgomery County	Bicycle	Signed shared roadway from Lindell Street to Urbana Drive	Glenmont Sector Plan (December 2013)
20	Randolph Road	Montgomery County	Shared Use Path	Shared use path from Denley Road to Middlevale Lane	Glenmont Sector Plan (December 2013)
21	Saddlebrook Connector	Montgomery County	Shared Use Path	Shared use path from Layhill Road to Randolph Road	Glenmont Sector Plan (December 2013)
22	Saddlebrook Drive Extension	Montgomery County	Shared Use Path	Shared use path from Saddlebrook Drive to Saddlebrook Connector	Glenmont Sector Plan (December 2013)
23	Urbana Drive	Montgomery County	Bicycle	Signed shared roadway from Denley Road to Georgia Avenue	Glenmont Sector Plan (December 2013)
24	Weller Road	Montgomery County	Bicycle	Signed shared roadway from Holdridge Road to Briggs Road	Glenmont Sector Plan (December 2013)

Table 3 – Summary of Other Study Recommendations

Item No	Corridor	Jurisdiction	Improvement Type	Description	Reference
1	Georgia Avenue (MD 97)	MdSHA	Sidewalk	Widen the sidewalk on the NB side of Georgia Avenue (MD 97) from Weller Road to Randolph Road	2012-2017 WMATA CIP
2	Georgia Avenue (MD 97)	MdSHA	Curb Ramp; APS/CPS	Re-Construct the intersection of Georgia Avenue (MD 97) and Urbana Drive to provide APS/CPS signals and ADA compliant curb and median ramps	2012-2017 WMATA CIP
3	Glenallan Drive	Montgomery County	Mid-block	Construct a new mid-block crossing Glenallan Avenue at the Entrance/Exit of Privacy World	2012-2017 WMATA CIP
4	Glenallan Drive	Montgomery County	Mid-block	Re-Construct the mid-block crossing Glenallan Avenue at the Entrance/Exit of Privacy World to provide ADA compliant curb ramps	2012-2017 WMATA CIP
5	Glenfield Park	Montgomery County	Shared Use Path	Construct a shared use path from the intersection of Briggs Road and Ideal Drive to the parking area of Glenfield Park through the woods	2012-2017 WMATA CIP
6	Glenmont Greenway	Montgomery County	Shared Use Path	Repair/Resurface the shared use path between Judson Road and Urbana Drive	2012-2017 WMATA CIP
7	Layhill Road (MD 182)	WMATA	Sidewalk	Construct sidewalk from the SW corner of the intersection of Layhill Road (MD 182) and Glenallan Avenue to the WMATA parking garage	2012-2017 WMATA CIP
8	Layhill Road (MD 182)	MdSHA	Sidewalk	Widen the Sidewalk on the WB side of Layhill Road (MD 182) from the Glenmont Rail Yard Entrance to the WMATA Glenmont Station driveway	2012-2017 WMATA CIP
9	Layhill Road (MD 182)	MdSHA	Mid-block	Construct a new mid-block crossing Layhill Road (MD 182) at the location of Greenery Lane	2012-2017 WMATA CIP

Glenmont

Public Input



Public Input



PUBLIC INPUT

MID-COUNTY REGIONAL SERVICES CENTER MEETING

In November 2014, MCDOT attended a meeting with community stakeholders at the Mid-County Regional Services Center in Wheaton, MD. The following concerns were expressed for the Glenmont BiPPA:

1. Georgia Ave (MD 97) and Layhill Road: Pedestrians are crossing at a mid-block location to get from the parking lot to the Glenmont Metro Station. The median has obvious signs of heavy pedestrian traffic.
2. Randolph Road and Heurich Rd: Heavy pedestrian volumes associated with John F. Kennedy High School to the northeast.

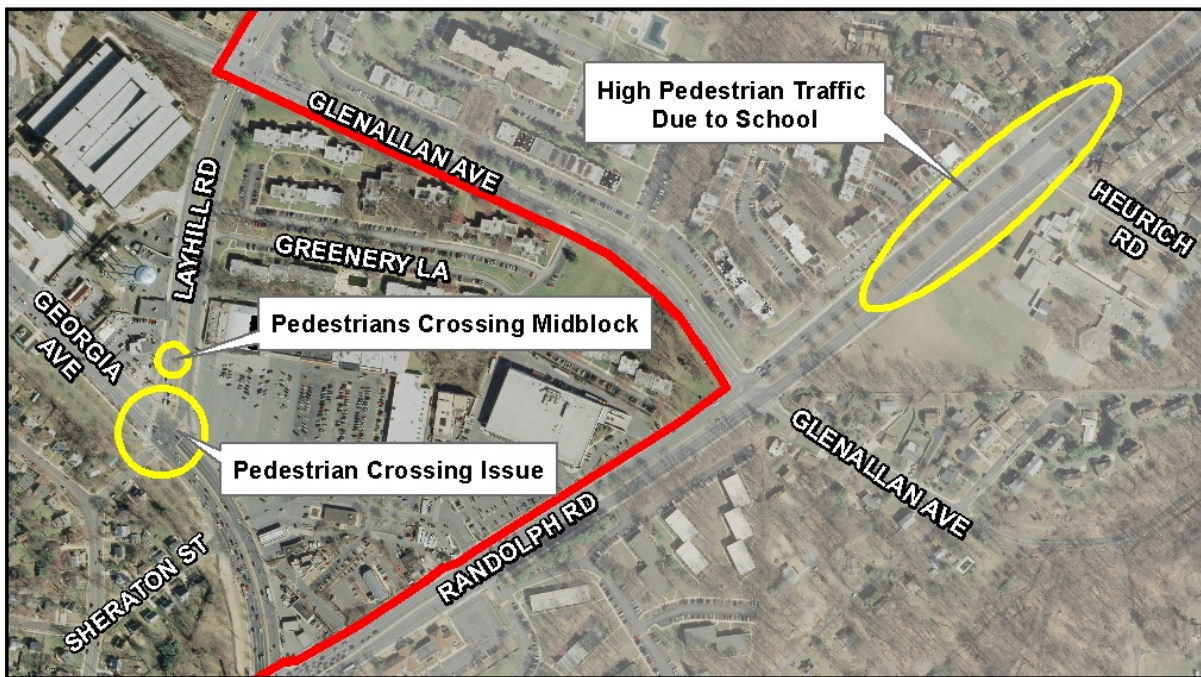


Figure 5 – Concerns Discussed at the Mid-County Regional Services Center Meeting



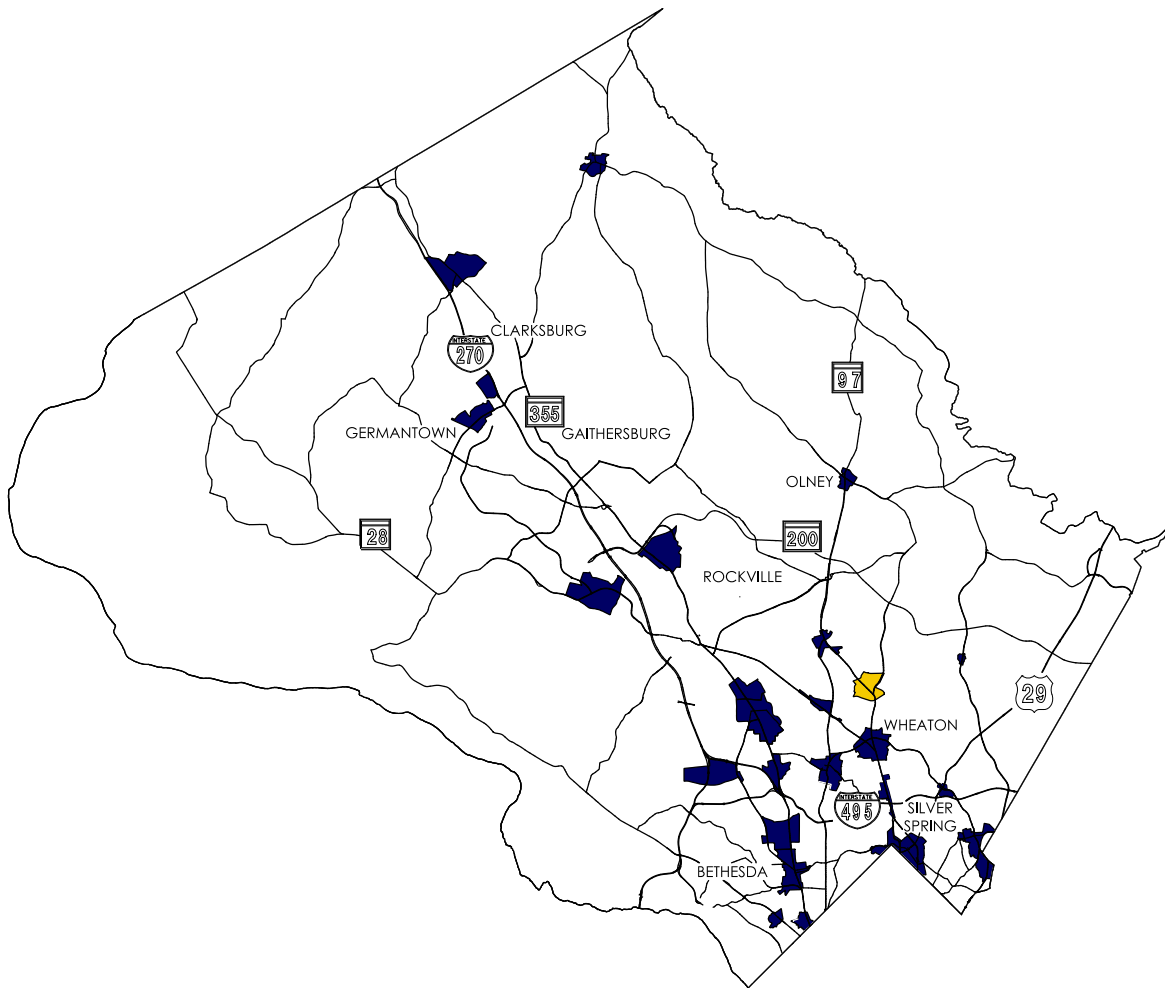
STAKEHOLDERS

Stakeholders for the Glenmont BiPPA include the Mid-County Regional Service Center, the Montgomery County Council, the Maryland State Highway Administration (SHA), the Montgomery County Department of Transportation (MCDOT), and the Maryland-National Capital Park and Planning Commission (M-NCPPC). As the planning and implementation process continues, it is expected that additional stakeholders will include:

- Montgomery County Department of Permitting Services
- Montgomery County Department of Environmental Protection
- Metropolitan Area Transit Authority (WMATA)
- PEPCO
- Verizon
- Washington Gas and Light
- Washington Suburban Sanitary Commission

Glenmont

Field Investigation and Existing Conditions



FIELD INVESTIGATION AND OBSERVATIONS

FIELD INVESTIGATION SUMMARY

For the BiPPA study, a comprehensive field investigation was performed to further define how and where master plan improvements could be implemented at street level within the Glenmont area. Preparation and execution of field investigations followed these basic steps:

- 1) Downloaded basemapping and aerial imagery available from the Montgomery County Parks and Planning Commission online database to the office network server;
- 2) Uploaded basemapping onto mobile iPad/ArcMap platform;
- 3) Prepared a customized menu with all potential improvement types and loaded onto ArcMap;
- 4) Visited study area with field crews consisting of one or two transportation engineers and one GIS technician;
- 5) Collected locations, photos, and notes on various proposed improvements in the field using iPad/ArcMap platform;
- 6) Uploaded data collected in the field to network server for further analysis and design.

The outlined method proved to be especially useful for locating potential spot improvements such as curb ramps, driveway aprons, APS/CPS, curb extensions, median refuge, signing, maintenance tasks, etc.

By performing field investigations, crews were also able to note other important factors such as site constraints, user behavior, facility operation, safety issues, and adjacent construction.



BICYCLE AND PEDESTRIAN NETWORK

There are existing bike lanes on MD 182 from the Glenmont Rail Yard to Briggs Road. These bike lanes are approximately eight feet wide and the markings are in need of replacement.

Glenallan Avenue from MD 97 to Randolph Road, Urbana Drive from Denley Road to MD 97, Livingston Street from Randolph Road to Urbana Drive, Flack Street from Weller Road to Urbana Drive, Weller Road from Holdridge Road to Briggs Road, Briggs Road from Weller Road to MD 182 are designated as shared roadways by M-NCPPC. However, field observations confirmed that these roads are not marked or signed as shared roadways.

There are existing bicycle racks at the Glenmont Metro Station; however, bicycle connectivity from the surrounding area to the station is mediocre.

Sidewalks are fairly prevalent throughout the area. However, many sidewalks are less than the standard 4' width.



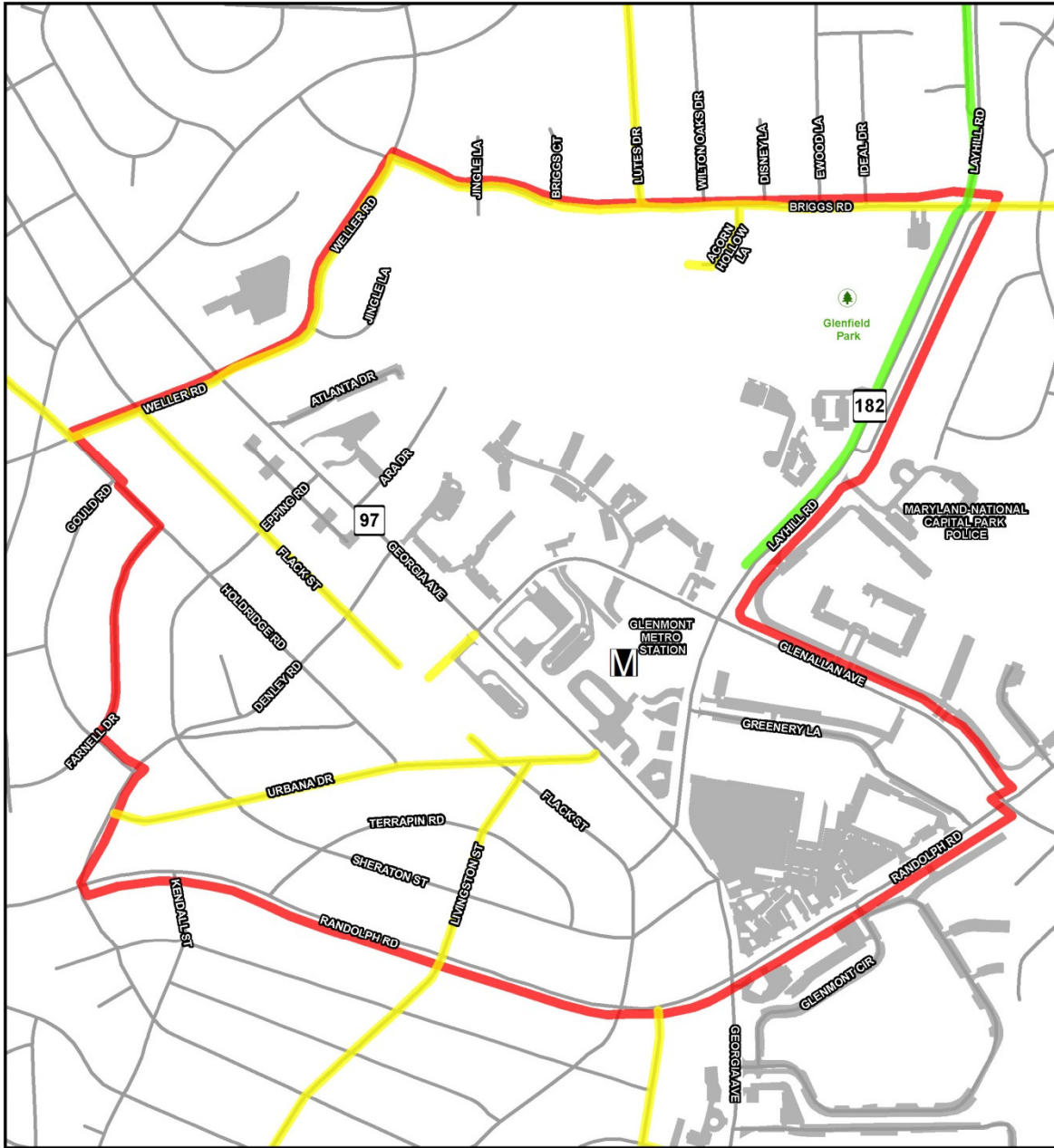
Figure 6 – Typical Bicycle Route Wayfinding Signage

TRANSIT NETWORK

The Glenmont BiPPA is served by the Glenmont Metro Station located on MD 97 between MD 182 and Glenallan Avenue. The Glenmont Metro Station is the eastern terminus of the Red Line; the Red Line has a U-shaped alignment with the other terminus in Rockville, MD. The southernmost points along the Red-line are in downtown Washington D.C. near the Verizon Center. The station occupies a significant amount of land within the triangular parcel created by the intersections of MD 97, MD 182, and Glenallan Avenue. There are entrances from all three adjacent roadways and station facilities including a transit bus loop, a kiss 'n' ride loop, and two parking structures. One of the parking structures was constructed recently and is located on the west side of MD 97. Pedestrian access from the parking structure to the rail station platform is provided via tunnel below MD 97.

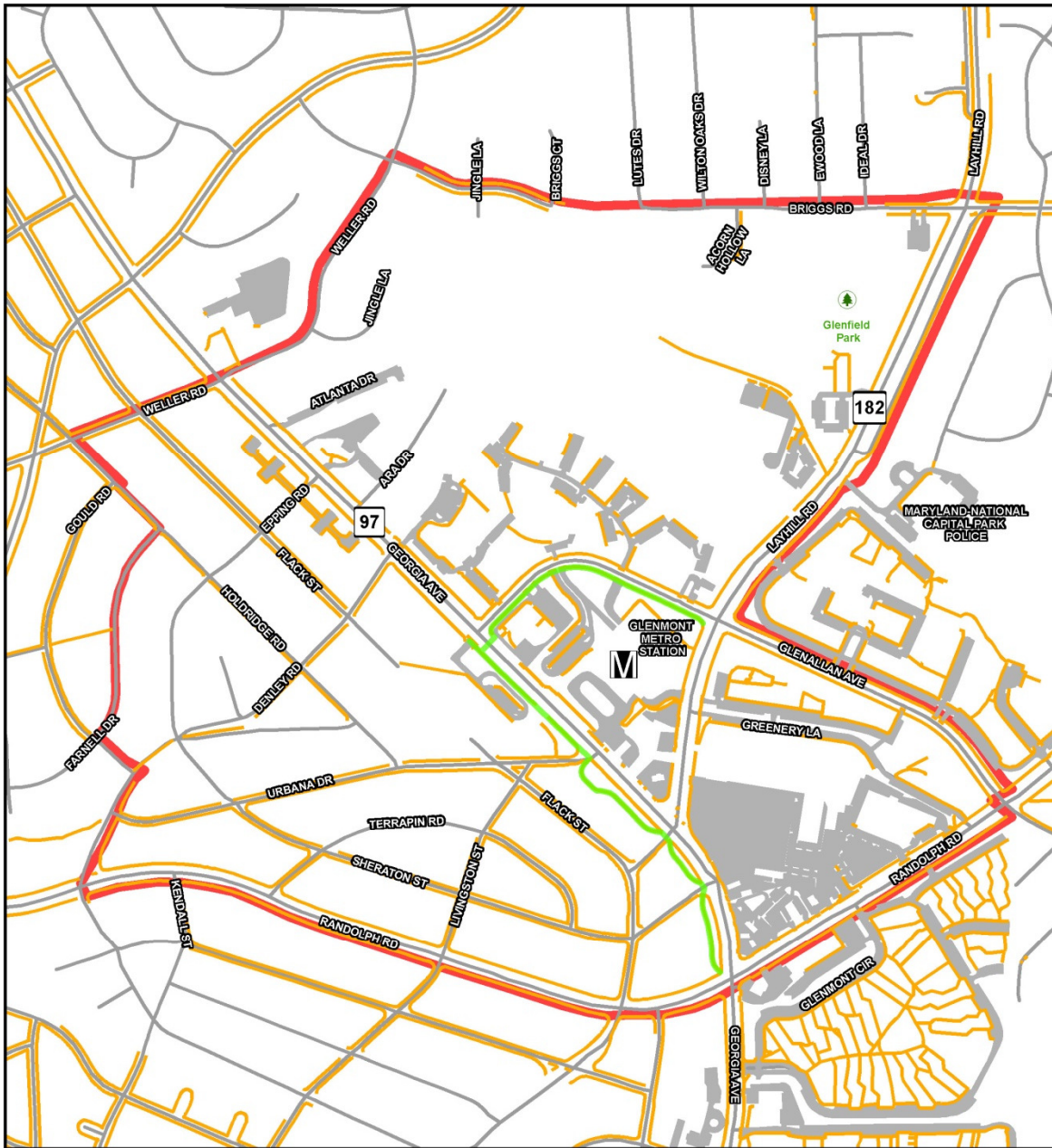


Figure 7 – Glenmont Metro Station



Metro Station	Shared Roadway
BiPPA Boundary	Bike Lane
	Cycle Track

Figure 8 – Existing Bicycle Network








 Metro Station	 Shared-Use Path
 BiPPA Boundary	 Sidewalk

Figure 9 – Existing Sidewalk and Shared-Use Path Network



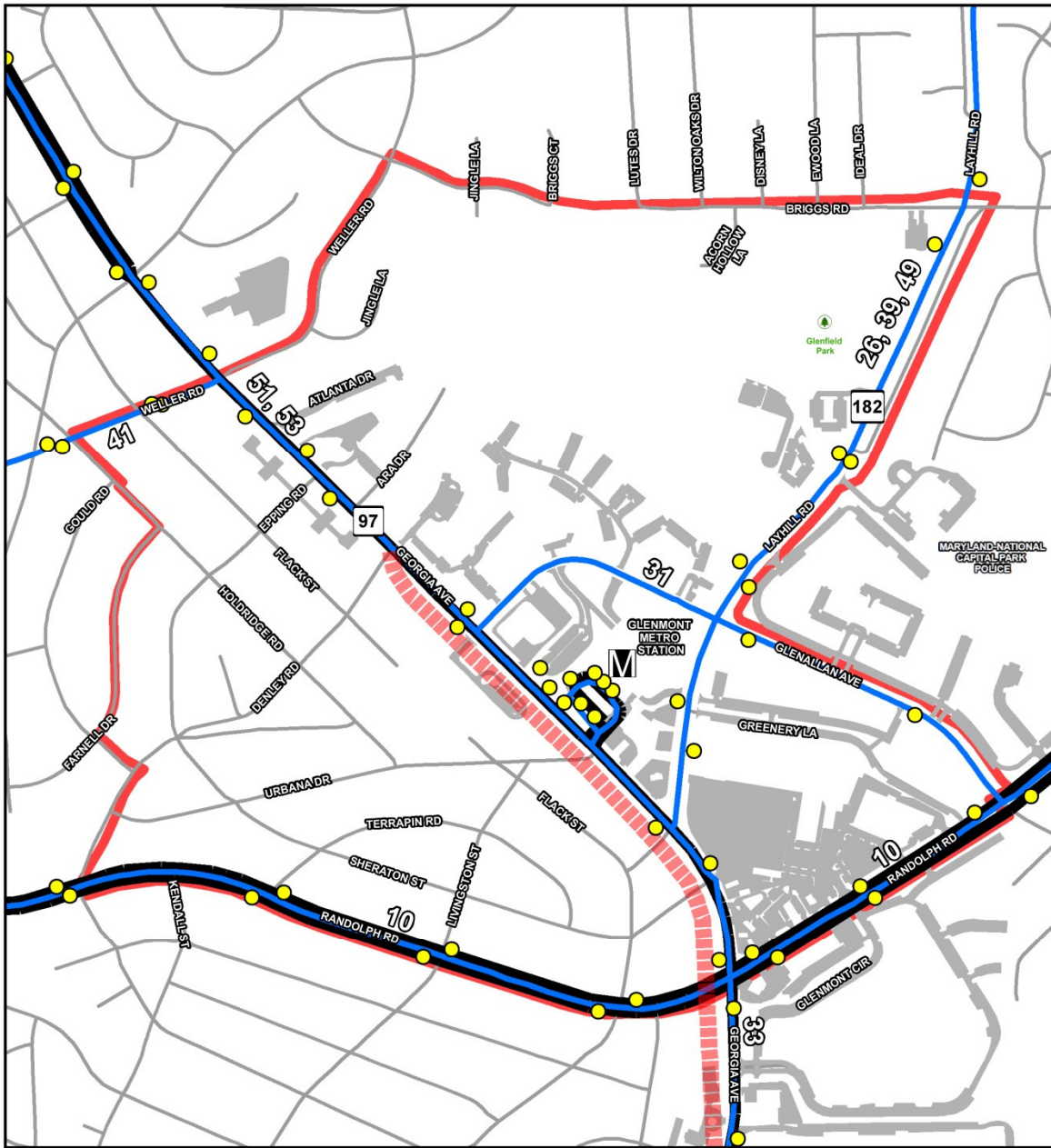
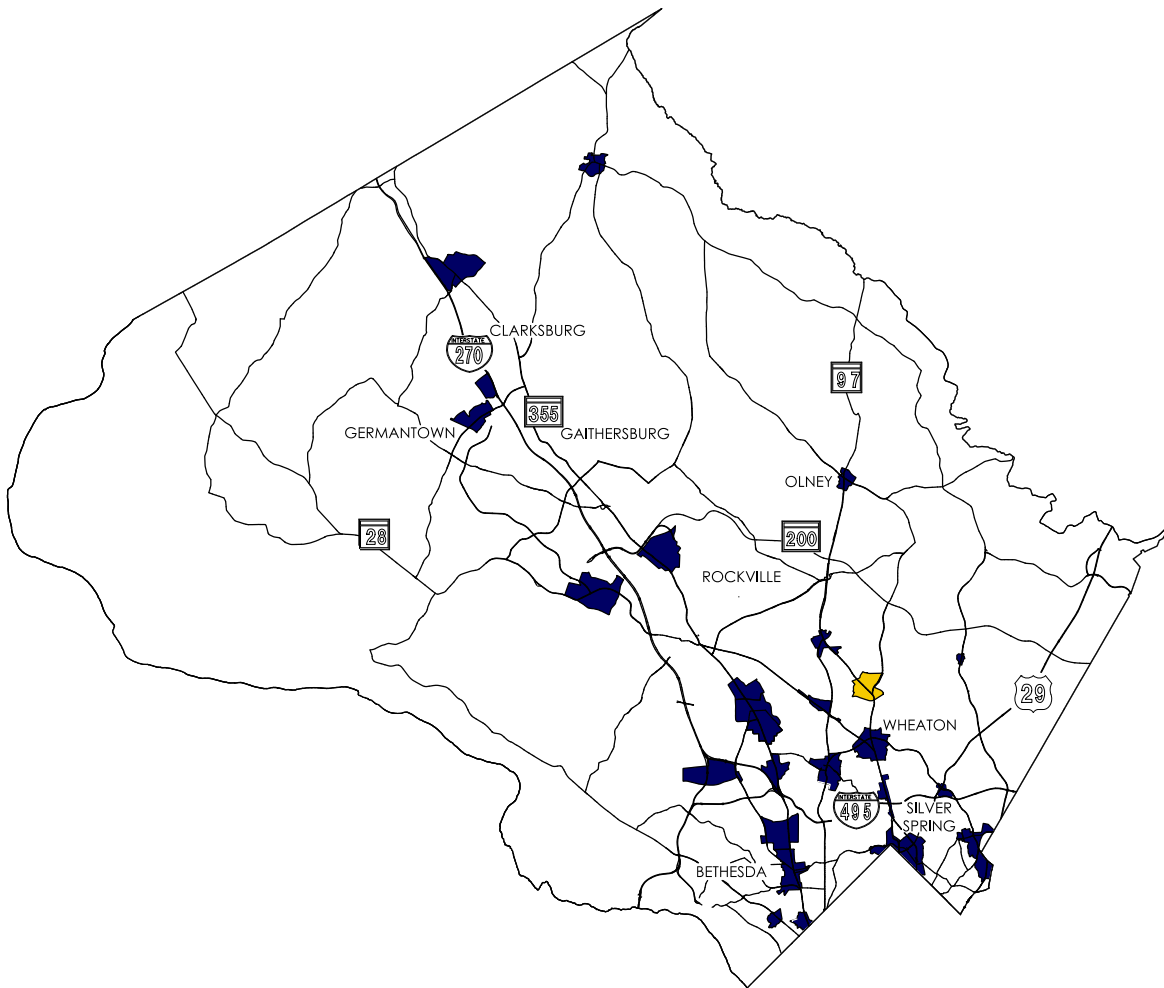


Figure 10 – Existing Transit Network

Glenmont

Ranking Criteria



RANKING CRITERIA

This study proposes some improvements that can be implemented almost immediately, some in phases or increments, while others will need to follow the capital project track through to planning, design and construction. To help prioritize improvements, the following factors have been considered for each of the proposed improvements:

1. Priority - High, Medium, Low
 - a. Determined based on the net sum of:
 - i. Benefits – Safety, Connectivity and Circulation, Transportation Equity, Accessibility, Infrastructure Upgrade, Master Plan, Public Input
 - ii. Impacts – Right of way, Environmental, Traffic, Parking, Utilities
2. Timeframe – Short-term (1 – 2 years), Mid-term (2 – 5 years), Long-term (5+ years)
 - a. Determined based on the sum of:
 - i. Design Tasks – Environmental Investigation, Survey, Utility Investigation, Soils Investigation, Traffic Study, Contract Documents, Public/Stakeholder coordination, Permits & Approvals, Right of way acquisition, Funding
 - ii. Construction Tasks – Paving, Grading, Structures, Utility Relocation, Drainage/Storm Water Management/Erosion & Sediment Control, Signals, Lighting, Signing & Marking, Traffic Control
3. Cost (Order of magnitude)
 - a. Broken down into the following ranges:
 - i. \$ = <\$10,000
 - ii. \$\$ = \$10,000 - \$100,000
 - iii. \$\$\$ = 100,000 - \$1,000,000
 - iv. \$\$\$\$ = 1,000,000 - \$5,000,000
 - v. \$\$\$\$\$ = >\$5,000,000



Priority is simply based on the ratio of benefits to impacts. For improvements with multiple benefits and few impacts, a high priority is the result. Likewise, improvements with few benefits and multiple impacts result in a low priority.

Timeframe is based on the number of design and construction tasks necessary to implement an improvement. Short-term improvements have an estimated completion time of 1-2 years and would require minimal design, coordination, or permits/approvals. Furthermore, short-term improvements can likely be implemented with established funding sources. Examples of short-term improvements include signing and marking, ADA upgrades, and maintenance tasks. Mid-term improvements have an estimated completion time of 2-5 years and would typically require a combination of further design, coordination, programmed funding, and permits/approvals. Typical mid-term improvements include shared-use paths, cycle tracks, and new signals. Lastly, long-term improvements have an estimated completion date that is greater than 5 years. These projects would require an extensive combination of further planning, design, coordination, political will, programmed funding, and permits/approvals. The typical scope of long-term improvements would include reconstruction and extensive impacts such as utility relocations and right of way acquisition.

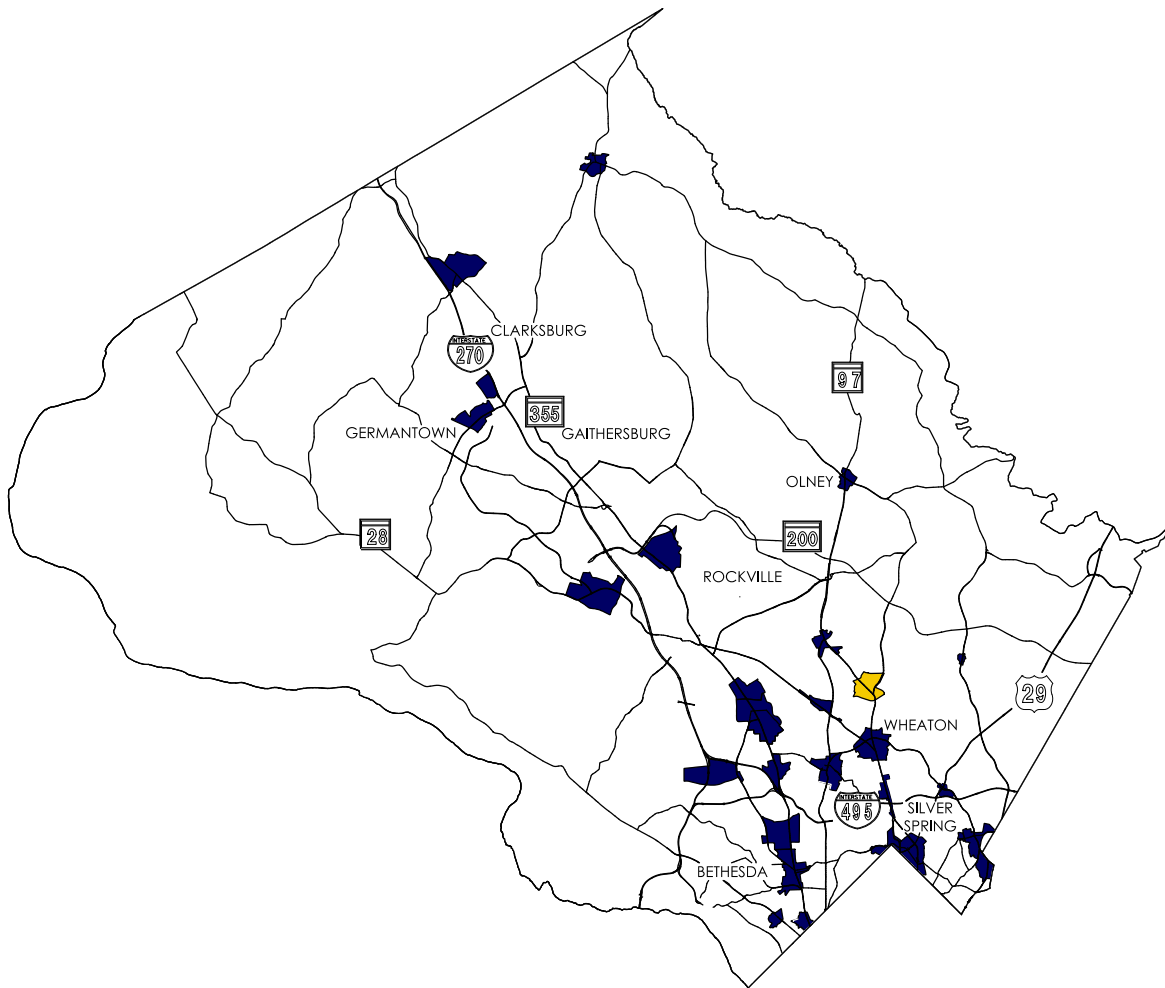
Cost is based on methodology provided in the attached appendix. However, the cost component is largely subjective and should only be considered as an order of magnitude.

The implementation for each improvement could follow a different track, depending on the factors listed above, as well as the implementing agency. However, short-term improvements could likely be constructed with a combination of basic design drawings and MCDOT and/or MDSHA standard drawings to locate and construct improvements. Mid- and long-term improvements will generally require further project development that includes coordination, survey, design, ROW acquisition, permits, and/or approvals.

Funding sources are subject to change throughout the duration of this study. At the present time, all public transportation agencies and funding entities - federal, state, county, and municipal - are considered potential partners for funding of implementation and maintenance of these priority improvements. For county roads, funds are appropriated directly by the Montgomery County Council. For state roads, depending on the type of improvement, different funds can be used to implement improvements. Fund 76 and Fund 77 projects, commonly used for signal upgrades, pavement resurfacing, signing and marking, can incorporate bicycle and pedestrian accommodations. A list of known, potential funding sources is listed the appendices.

Glenmont

Priority Improvements



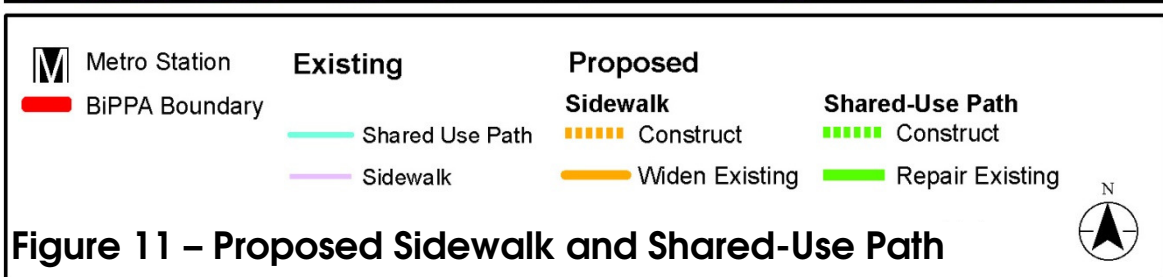
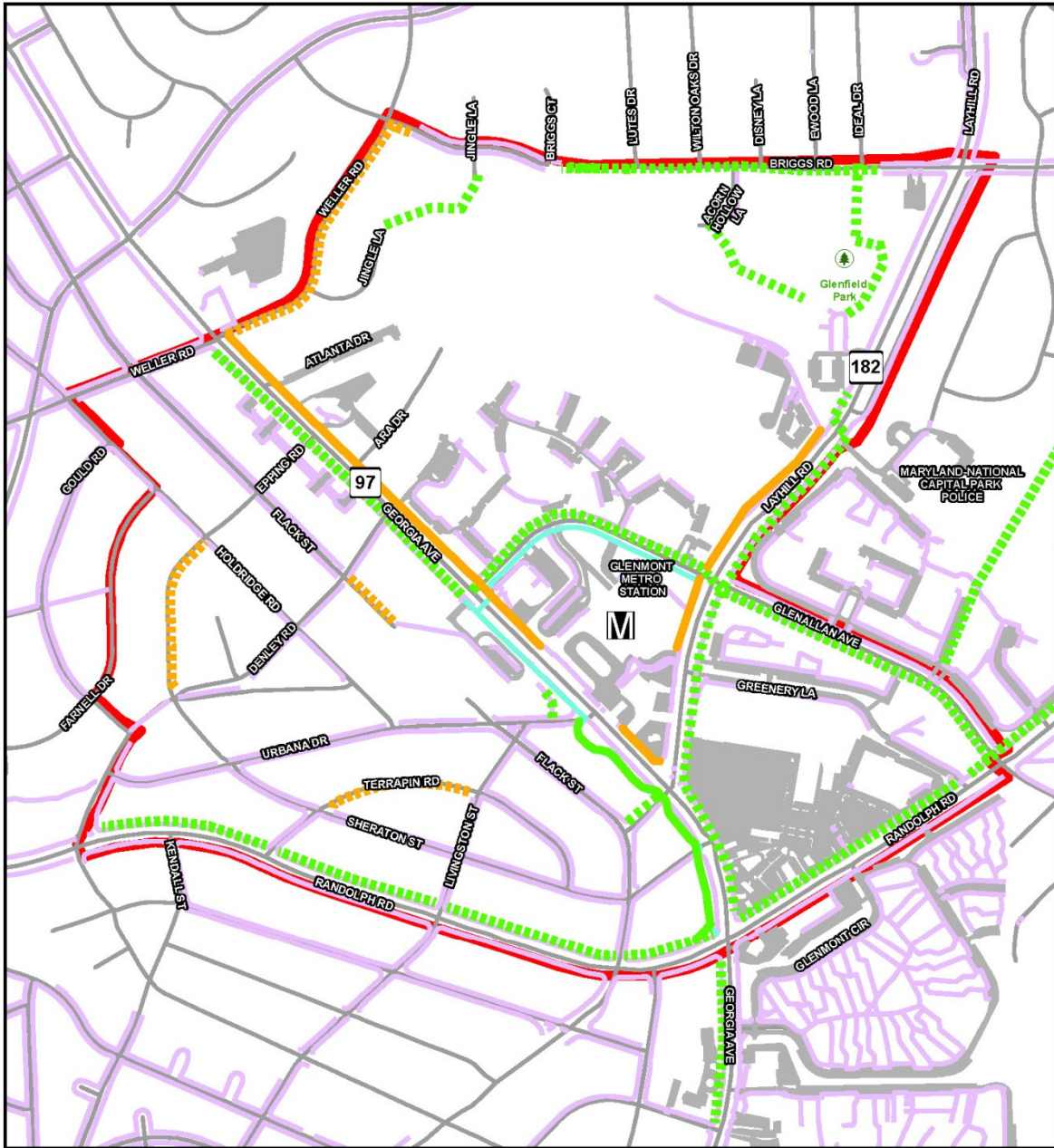
PRIORITY IMPROVEMENTS

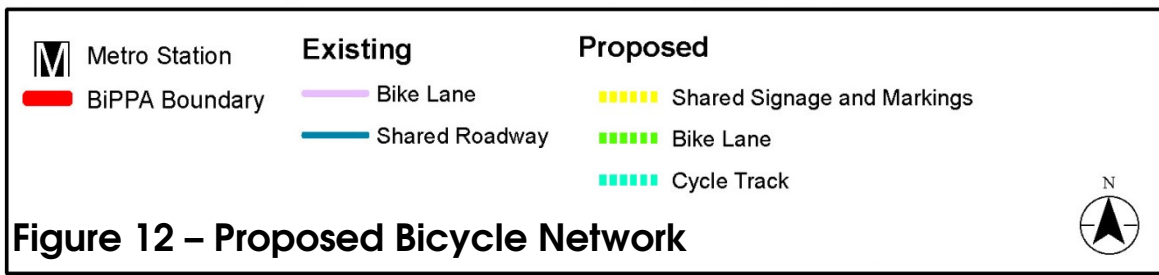
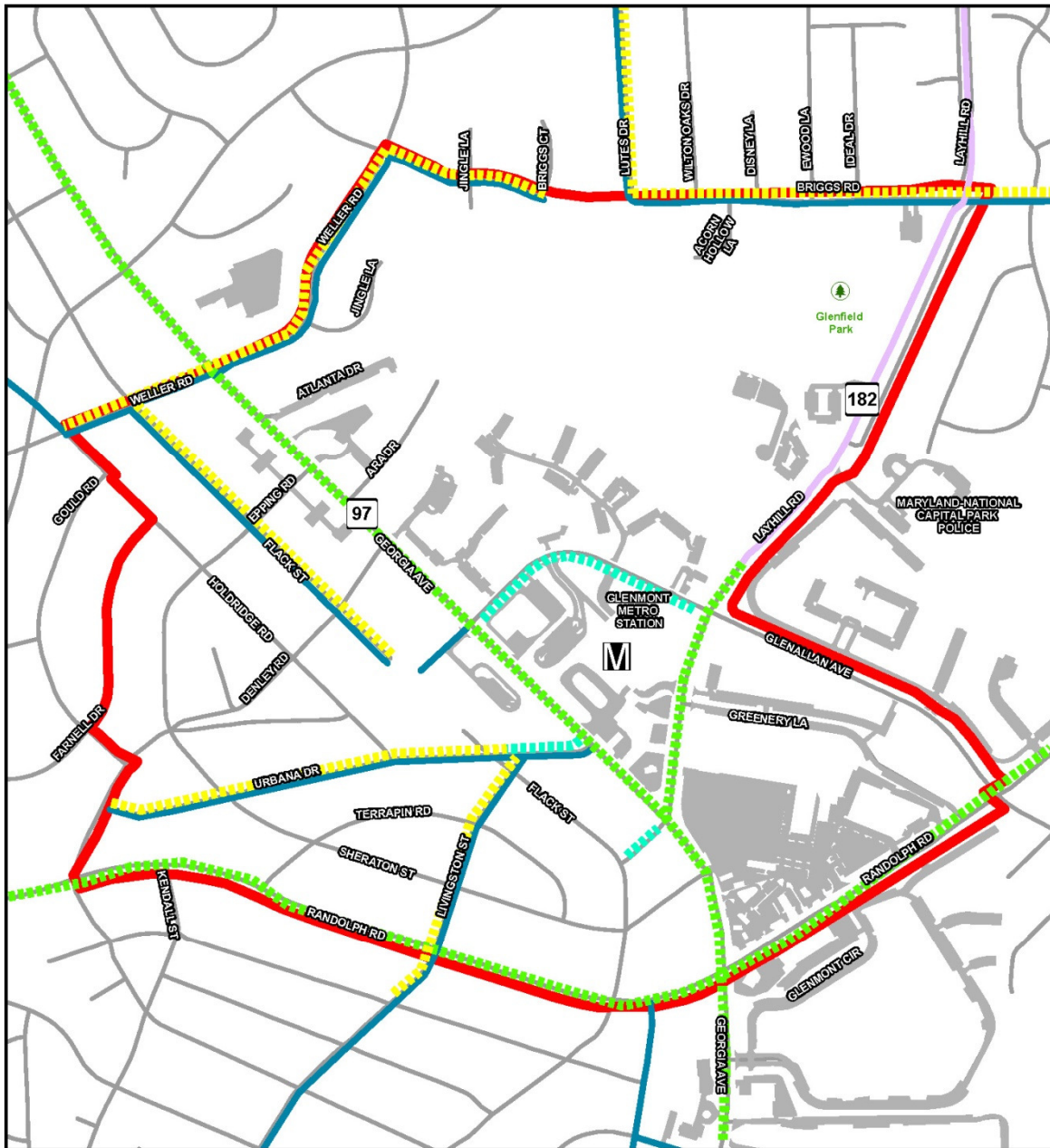
OVERVIEW OF IMPROVEMENT TYPES

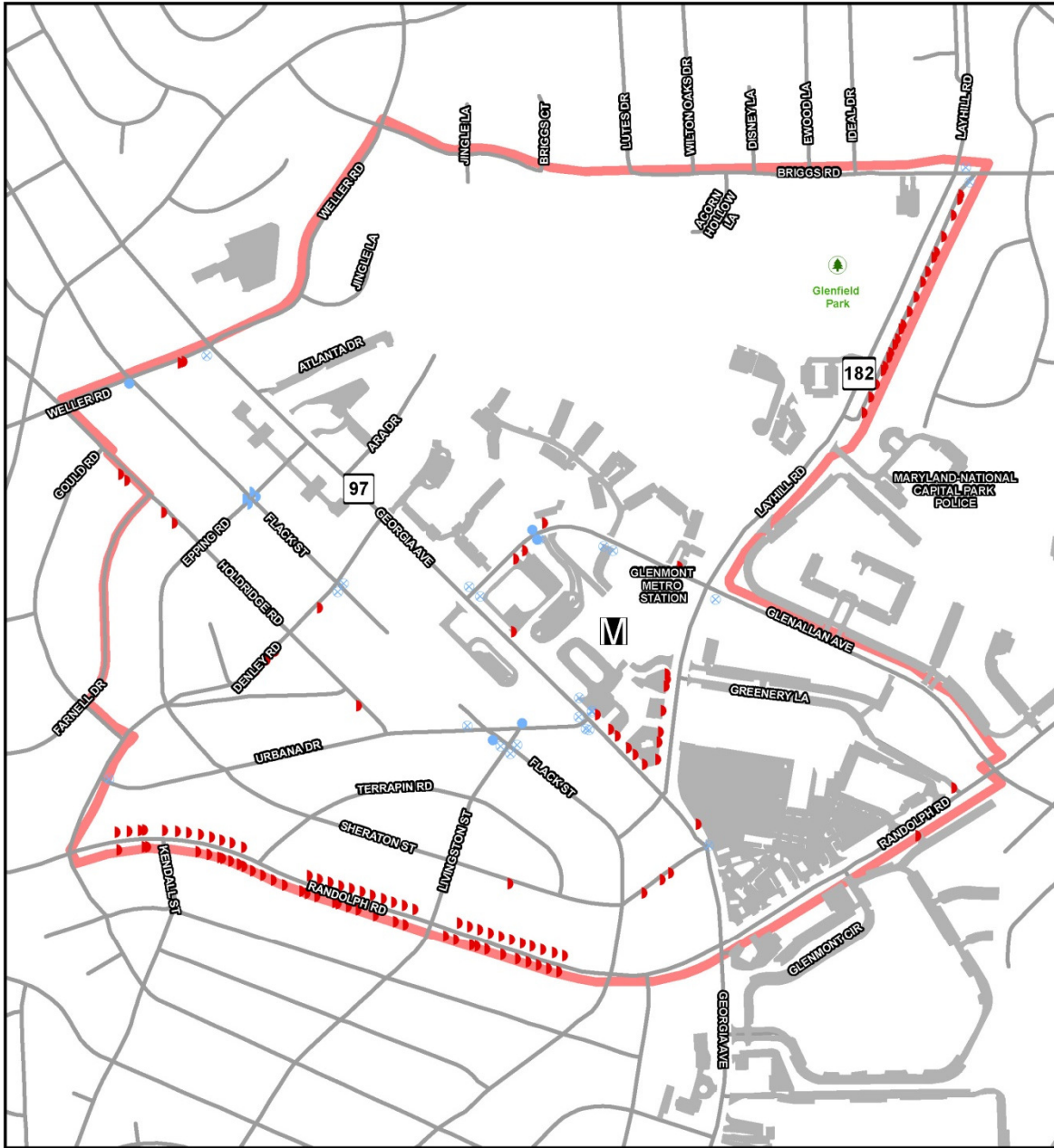
The Glenmont BIPPA has been evaluated for various bicycle and pedestrian improvements types. Proposed improvements have been developed and prioritized based on master or sector plan recommendations and public/stakeholder input.

In the Recommend Priority Improvements section, improvements are primarily organized by corridors or intersections. However, many improvement types can be implemented in an area-wide project format as well. The area-wide improvements include pedestrian curb ramps, reconstruction of driveway aprons, widening of sidewalk, reconstruction of sidewalk, striping or re-striping of crosswalks, the addition of APS/CPS, installation or relocation of pedestrian/bicycle signing, and general tree trimming maintenance. The linear improvements include the implementation of shared lanes (sharrows), bike lanes, and cycle tracks, as well as, the construction of shared-use paths and sidewalks.

Table 4 – Improvement Type Summary	
Improvement	Applications and Benefits
Sidewalk	<i>Pedestrian connections to parks, schools, residents, businesses, or other sidewalk / trail sections</i>
Shared-Use Paths	<i>Pedestrian connections to parks, schools, residents, businesses, or other sidewalk / trail sections</i>
Shared Roadway Markings	<i>Limited lane widths, on-street parking sections, wayfinding, or wherever correct bicycle positioning is vague</i>
Bike Lanes	<i>Higher-speed (greater than 25mph) streets to avoid some bicycle-car conflicts and create predictable movements</i>
Cycle Track	<i>Similar to bicycle lanes, also reduces some concerns from overtaking crashes and may reduce double-parking</i>
Curb Ramp	<i>Missing or non-ADA-compliant curb ramps</i>
Driveway Apron	<i>Deteriorated, missing, or non-ADA-compliant aprons</i>
Median Refuge	<i>Increases separation of pedestrians from car traffic to improve comfort levels and safety</i>
Curb Extension	<i>Shortens crossing distances, lowers speeds of turning vehicles, increases visibility of pedestrians entering an intersection</i>
Bike Box	<i>Reduces bicycle delay, increases bicycle convenience, and improves bicycle positioning in traffic in slow/start situations.</i>
Crosswalks	<i>Improves visibility of pedestrians in motorway (may be high-visibility markings), denotes best or preferred location for pedestrian crossings</i>
Accessible / Countdown Pedestrian Signal	<i>Replaces non-compliant signals, improves crossing safety for pedestrians, particularly on long crossing maneuvers</i>
Pedestrian-Actuated Signal	<i>Reduces pedestrian and vehicular delay</i>



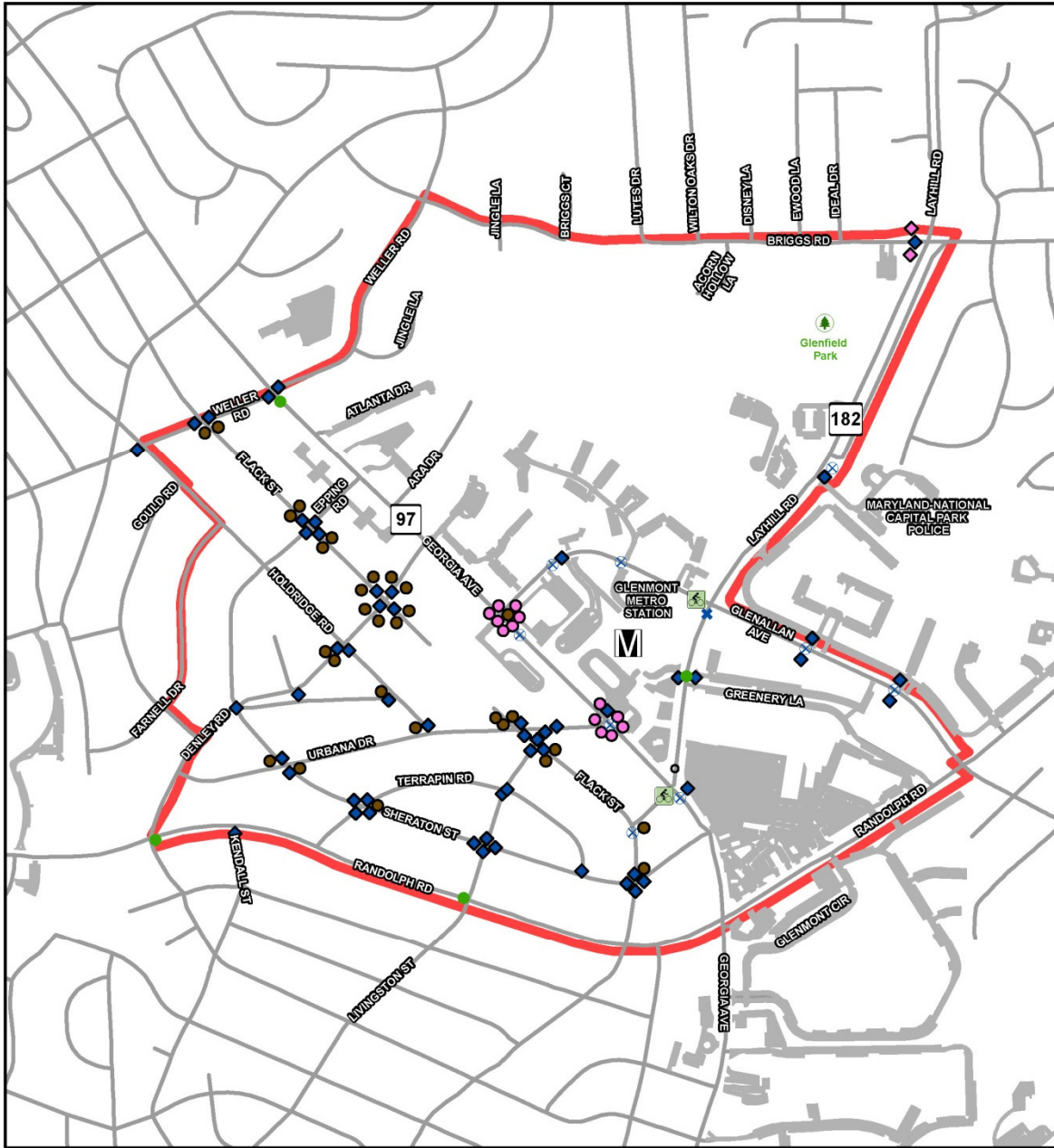


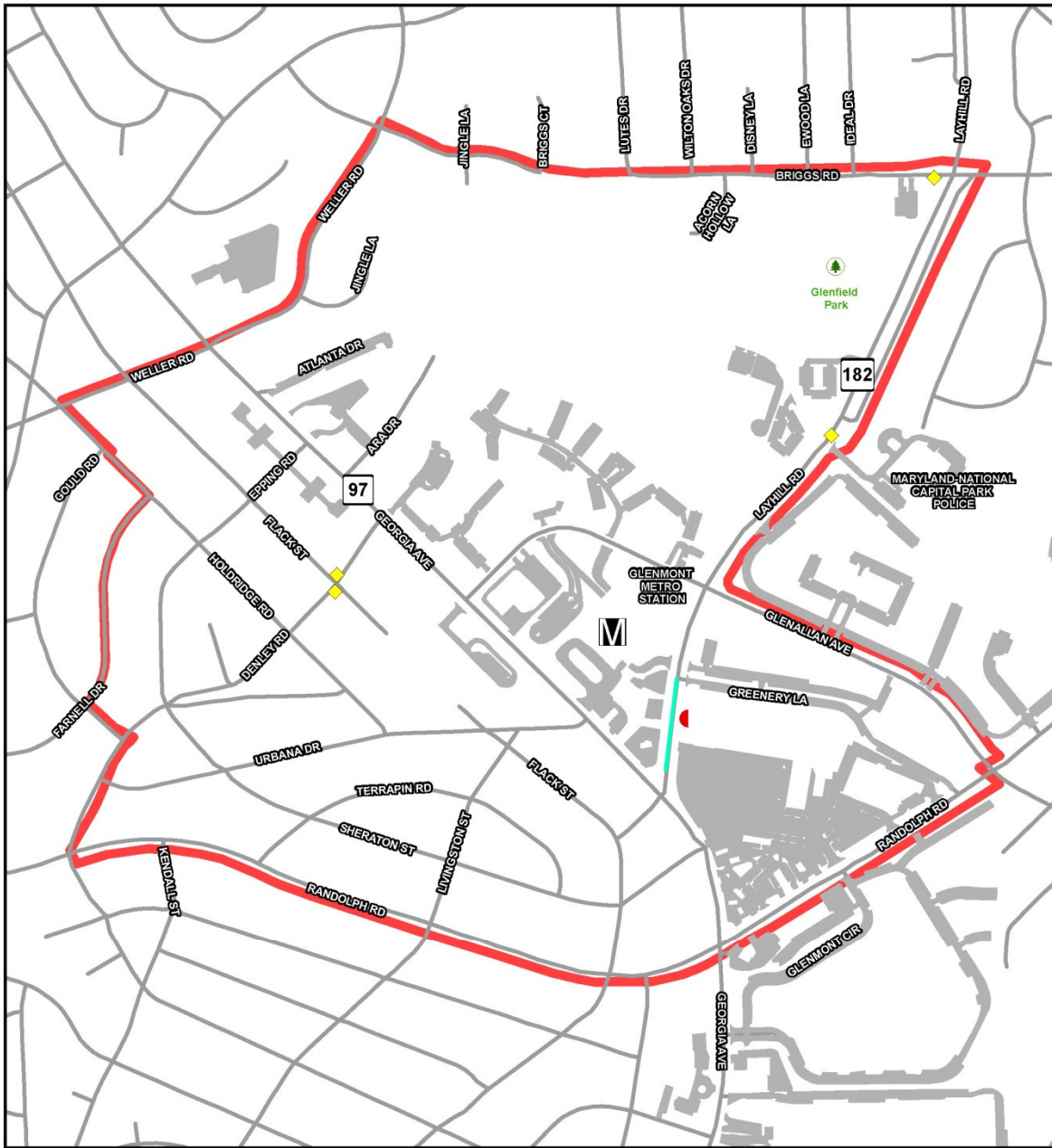


	Metro Station		Reconstruct Driveway Apron
	BiPPA Boundary		Serves Two Crosswalks
			Construct New Curb Ramp
			Noncompliant Slope

Figure 13 – Proposed ADA Improvements








Metro Station	Signing
BiPPA Boundary	Safety Railing
	Median Fence

Figure 15 – Proposed Safety Improvements





Metro Station	Reconstruct Sidewalk	Cut Back Grass Growth
BiPPA Boundary	Vertical Obstruction - Low Overhead Clearance	Cut Back Hedges Growth
	Vertical Obstruction - Trip Hazard	Cut Back Trees / Branches
		Re-stripe Bike Symbol

Figure 16 – Proposed Maintenance



RECOMMENDED PRIORITY IMPROVEMENTS

The following section summarizes priority improvements developed for this BiPPA study. This section should be read in combination with concept plans. Priority and timeframe are based on the ranking criteria established in the previous section. Costs are also based on general assumptions and the cost methodology.

Briggs Road

From Weller Road to Briggs Court

Improvement Type: *Sidewalk, Sharrow markings, Signing*

Priority: *High* **Timeframe:** *Short-term* **Cost:** *\$*

Briggs Road is designated as a shared roadway in the 2013 Glenmont Sector Plan. However, there is no signing and marking to indicate this designation.

Briggs Road should be improved with “Bicycle May Use Full Lane” and “Bicycle Route” signing. Sharrow markings should be located immediately after intersections and spaced at 250’ intervals thereafter. Sharrow markings should be placed at a minimum of 11 feet from the face of curb where there is a parking lane and at a minimum of 4 feet from the face of curb where there is no parking.

A proposed sidewalk would also provide connectivity with the proposed sidewalk along Weller Road and proposed shared-use path to the east. This project is within the county right-of-way.

From Briggs Court to Lutes Drive

Improvement Type: *Shared-Use Path, Lighting*

Priority: *Medium* **Timeframe:** *Mid-term* **Cost:** *\$\$*

There is an existing 3-foot wide asphalt path that runs along a “paper” street, connecting the two ends of Briggs Road. The path is in poor condition and is not ADA accessible. It is recommended that this path be reconstructed into a 10-foot wide shared use path. The path alignment should be designed to avoid existing overhead utilities and the existing drainage swale. This improvement would need to include drainage improvements, lighting, storm water management, and erosion & sediment control measures. Proposed improvements should be coordinated with the community, PEPCO, M-NCPPC, and the Department of Permitting Services.



From Lutes Drive to Ideal Drive

Improvement Type: Shared-Use Path, Sharrow markings, Signing, Lighting

Priority: High Timeframe: Mid-term Cost: \$\$\$

Briggs Road from Lutes Drive to Ideal Drive is an open section roadway in poor condition. The roadway should ultimately be improved to the county's road code standards. However, pedestrian and bicycle improvements along this segment should be implemented at a minimum. A proposed shared use path along the south side of the roadway and/or sharrow markings would provide improved connectivity with points east and west, as well as, to Glenfield Park. Lighting should be provided for the shared-use path.

Flack Street

From Weller Road to Glenmont Metro parking garage

Improvement Type: Sharrow markings, Signing

Priority: High Timeframe: Short-term Cost: \$\$

Flack Street is designated as a shared roadway in the 2013 Glenmont Sector Plan. However, there is no signing and marking to indicate this designation.

Flack Street should be improved with "Bicycle May Use Full Lane" and "Bicycle Route" signing. Sharrow markings should be located immediately after intersections and spaced at 250' intervals thereafter. Sharrow markings should be placed at a minimum of 11 feet from the face of curb where there is a parking lane and at a minimum of 4 feet from the face of curb where there is no parking.

From Denley Road to Glenmont Metro parking garage

Improvement Type: Sidewalk

Priority: High Timeframe: Short-term Cost: \$

There is a gap in the sidewalk along Flack Street from Denley Rd to the Glenmont Metro parking garage. It is recommended that a sidewalk be installed along the east side of Flack Street. This sidewalk would connect the sidewalk to the north with the shared-use path that leads to the parking garage and the Glenmont Greenway. To avoid right of way or specimen tree impacts, the outside edge of the proposed sidewalk should be aligned with the existing face of curb and constructed inward toward the roadway centerline. Parking along the east side of the roadway could be accommodated along the west side.



@Weller Road, @Epping Road, @Denley Road, @ Urbana Drive / Livingston Street, @Judson Road

Improvement Type: Curb ramps, Curb Extensions, Crosswalks, Pocket Park

Priority: Medium Timeframe: Mid-term Cost: \$\$\$

It is recommended that 14 crosswalks are striped and 19 curb ramps are reconstructed at these intersections. Crosswalks should be striped and curb ramps should be improved to be ADA compliant. These improvements should be coordinated with the community.

It is also recommended that curb extensions be installed at these intersections to calm traffic and reduce crosswalk distance, promoting a more walkable community. The curb extensions should include storm water management features, such as bioretention and should also be designed to prevent trapping storm water flow from the gutter. Curb extensions should be designed to accommodate an AASHTO SU-40 design vehicle (fire truck). Next steps include survey, soil borings/infiltration testing, and landscape design.

There is a unique opportunity to remove excessive pavement at Flack Street at Urbana Drive/Livingston Street. The intersection of these roadways creates an unusual triangular patch of grass. If the short segment of Livingston Street were removed, this area could be turned into a small pocket park, large enough for a fenced in area with a children’s jungle gym, or an area with benches and landscaping. There is also an excessive amount of pavement where Flack Street terminates, just north of Urbana Drive, that should be removed.

A median refuge should be installed at the intersection with Judson Road to encourage traffic calming.

Georgia Avenue (MD 97)

@ Glenallan Avenue

Improvement Types: Curb ramps, APS, Median refuge, Signing & Marking

Priority: High Timeframe: Short-term Cost: \$\$

This intersection currently has CPS and push buttons, but the latter is not compliant with SHA policy. APS should be installed for all three crosswalks, for a total of six units. Along with the APS upgrades to this intersection, two curb ramps should be upgraded for ADA compliance. This project would be coordinated with the SHA.

The intersection currently has a median refuge. If the proposed Glenallan Ave cycle track is implemented, the refuge area should be improved for bicycle access through the intersection.



@ Urbana Drive (CO 1150)/Glenmont Metro bus loop entrance

Improvement Types: Curb ramps, APS, Median refuge, Signing & Marking

Priority: High Timeframe: Short-term Cost: \$\$

The intersection currently has CPS and some push buttons, but the latter are not compliant with SHA policy. APS should be installed for both crosswalks, for a total of four units. Along with the APS upgrades to this intersection, six curb ramps and one median cut-through should be upgraded for ADA compliance. The crosswalk used to access the Glenmont Metro station is not compliant and should be re-striped. This project would be coordinated with SHA and WMATA.

The intersection currently has a median refuge. If the proposed Urbana Drive cycle track is implemented, the refuge area should be improved for bicycle access through the intersection.

The right turn from Urbana Drive would also be eliminated if the cycle track is implemented. Eliminating the right turn would have the added benefit of reducing conflicts between right-turning vehicles and pedestrians/bicyclists crossing MD 97 southbound.

@ Weller Road

Improvement Types: Pedestrian signal, Curb ramps, APS/CPS, Median refuge, Signing & Marking

Priority: Medium Timeframe: Mid-term Cost: \$\$\$

The intersection of Weller Road and MD 97 is currently unsignalized. It is recommended that this intersection be studied for the installation of a pedestrian signal crossing, as Weller Road is designated as a shared roadway / bicycle route. The proposed crossing would also need a new crosswalk, curb ramps, and lighting.

@ Layhill Road (MD 182)/Judson Road (CO 1151)

Improvement Types: Bike box, Curb ramps, Median refuge, Signing & Marking

Priority: High Timeframe: Mid-term Cost: \$\$\$

This intersection is not only important as a junction for MD 97 and MD 182, but also for pedestrian and bicycle movements between the Glenmont Shopping Center, Glenmont Metro station, and the residential area to the west. The existing intersection could be characterized as fairly inhospitable for pedestrians and bicyclists, and was highlighted in community stakeholder workshops as a problem area. This is also an important intersection considering that the Glenmont Shopping Center has the future potential to be redeveloped into a town center. A high value should be placed on developing bicycle and pedestrian facility improvements at this intersection.

Proposed bicycle movements through the intersection, wider crosswalks, a new crosswalk and median refuge on the south leg of MD 97 are proposed for this intersection. A bike box would be installed on Judson Road eastbound to help bicycles transition from the proposed cycle



track to the proposed bike lanes on MD 182. The proposed improvements include removal of the free-right from MD 97 NB to MD 182 (Layhill Road). There is little queuing length along MD 97 today, so it is anticipated that the impact to through traffic would not be significant. Reducing the turning radius on this corner will improve pedestrian safety and encourage more pedestrians to use this crosswalk. Currently pedestrians make uncontrolled, mid-block crossings at various locations, for several hundred yards along MD 182 between MD 97 and Glenallan Road.

Alternatively, the right-turn ramp from MD 97 could be re-aligned with the middle travel lane and converted to a yield condition. The outside auxiliary lane along MD 182 NB could be converted to a shared use path / buffer / bike lane.

These improvements would require further traffic counts and a traffic study. The project would need to be coordinated with the SHA.

From Randolph Road to Weller Road

Improvement Type: Shared-Use Path, Cycle track or Bike lanes, Signing & Marking, Driveway Aprons

Priority: Low Timeframe: Long-term Cost: \$\$\$\$

According to the 2013 Glenmont Sector Plan, bike lanes are proposed for MD 97 through the Glenmont BiPPA. However, the Countywide Transit Corridors Functional Master Plan proposes a cycle track through the area. A cycle track provides greater protection to bicyclists, but would likely be a long-term improvement, considering that it requires coordination with the BRT improvements proposed for the corridor.

Glenallan Avenue

From Layhill Road (MD 182) to Randolph Road

Improvement Type: Shared-Use Path, Median Refuge

Priority: Low Timeframe: Mid-term Cost: \$\$\$\$

A shared-use path from MD 182 to Randolph Road is recommended along the south side of Glenallan Avenue. This improvement would provide connectivity with the proposed shared-use paths along MD 182, the existing shared-use path along Glenallan Avenue between MD 97 and MD 182, and the Glenmont Metro Station. It would also upgrade connectivity to the Wheaton Regional Park, which is to the east of the Glenmont BiPPA.

This corridor is generally attractive in its current condition, and the existing sidewalks are in excellent condition along both sides of Glenallan Avenue, so this is not considered a high priority.



Impacts include additional right of way and/or easements, possible tree impacts, and temporary parking impacts. Median refuge improvements would have a minor, permanent impact to on-street parking along Glenallan Avenue.

Next steps for construction of a shared-use path include topographic survey, boundary survey, and soil borings/infiltration testing. Stormwater management and erosion & sediment control permits would be required for construction. Public outreach is recommended with the local residences.

From Georgia Ave (MD 97) to Layhill Road (MD 182)

Improvement Type: Cycle Track, Median Refuge, Signing & Marking

Priority: High Timeframe: Short-term Cost: \$\$\$

A cycle track from MD 97 to MD 182 is recommended along the south side of Glenallan Avenue from MD 97 and MD 182. The outside, eastbound travel lane would be converted to a two-way cycle track with the remaining roadway to be re-striped for four lanes of traffic. It has been estimated that the overall cost for a cycle track on Glenallan Avenue is \$110,000. Coordination with WMATA and the adjacent Glenmont Metro Center developer is recommended. This project could be implemented in the short-term, as there would be little excavation needed.

Next steps include traffic counts, traffic study, and survey.

Median refuge should also be installed at both Glenmont Metro station entrances.

Glenfield Park Connector

Improvement Type: Shared-Use Path

Priority: Low Timeframe: Mid-term Cost: \$\$\$

There are two existing social paths that residents use to access Glenfield Park, one from Acorn Hollow Lane and the other from Briggs Road, near Ideal Drive. This improvement would upgrade the social paths to be paved, shared-use paths, improving connectivity from communities to the north and west of Glenfield Park. Both paths would be constructed through existing forest stands, so mitigation would be required to offset impacts. Lighting may be required.

Glenmont Greenway

Improvement Type: Maintenance

Priority: Medium Timeframe: Mid-term Cost: \$

The Glenmont Greenway, maintained by the M-NCPPC, from the WMATA Glenmont Metro garage to Randolph Road along southbound MD 97 is in good condition. However, the path should be re-sealed within the mid-term to extend pavement life.



Jingle Lane Connector

Improvement Type: *Shared-Use Path*

Priority: *Low* **Timeframe:** *Long-term* **Cost:** *\$\$\$*

The Jingle Lane Connector is a proposed shared-use connection for two dead-end sections of Jingle Lane. This shared use path would require a structure such as a boardwalk over a small tributary and should be further investigated. There would also be impacts to an existing forest stand, so mitigation would be required to offset impacts. Lighting may be required.

Judson Road

From Flack Street/Judson Road to Georgia Avenue (MD 97)

Improvement Types: *Cycle Track*

Priority: *High* **Timeframe:** *Short-term* **Cost:** *\$*

Unused pavement along the north side of Judson Road can be repurposed into a two-way cycle track and connected to the MD 182 bike lanes. Parking in front of one residence on the north side of Judson would need to be reallocated to the south side of the street. This improvement should be constructed in conjunction with the bike lanes on MD 182 and a bike box at MD 97 and Judson.

@Flack St/Judson St, @ Sheraton Street

Improvement Types: *Curb extensions, Median Refuge, Signing & Marking*

Priority: *Medium* **Timeframe:** *Short-term* **Cost:** *\$\$*

Curb extensions are recommended at the intersection of Judson and Sheraton Street at an estimated cost of \$20,000. Curb extensions will calm traffic and reduce crosswalk distance, promoting a more walkable community. The curb extensions should include storm water management features such as bioretention and should also be designed so as not to trap storm water flow from the gutter. Curb extensions should be designed to accommodate an AASHTO SU-40 design vehicle (fire truck). Next steps include survey, soil borings/infiltration testing (if SWM-BMP practices are incorporated into the greenspace), and landscape design.

Layhill Road (MD 182)

From Georgia Ave (MD 97) to Glenmont Rail Yard entrance

Improvement Types: *Bike Lanes, Signing & Marking, Median fence*

Priority: *High* **Timeframe:** *Short-term* **Cost:** *\$\$*

Currently, there are bike lanes on MD 182 from the Glenmont Rail Yard entrance to Briggs Road. These bike lanes should be extended southward to Glenallan Avenue and MD 97. The design for the bike lanes should include a logical transition to another bicycle facility, such as the proposed Glenallan Avenue cycle track or proposed Judson Road cycle track. Based on review of



existing information, there appears to be enough width in the existing typical section to re-stripe MD 182 SB with 11' travel lanes and 4' bike lanes. The SB bike lane could be easily incorporated into a resurfacing project. Along MD 182 NB, it is proposed that the outside NB auxiliary lane be converted to a bike lane, buffer, and shared use path from MD 97 to Glenfield Park (see below).

Lastly, a high volume of pedestrians make uncontrolled crossings at this divided, six-lane roadway between MD 97 and Glenallan Ave. It is an indirect route to either of the nearest signalized intersections considering the desire lines are between the Glenmont Shopping Center, Greenery Lane/Winexburg Apartments, a nearby bus stop, and the Glenmont Metro station. A median fence is proposed to channel pedestrian crossings at MD 97. This improvement should be incorporated with a signalized crossing at Greenery Lane (discussed below).

A shared-use path or sidewalk widening along MD 182 SB should also be required with the redevelopment of the Privacy World parcel from Glenallan Avenue to Glenmont Metro Yard entrance.

From Georgia Ave (MD 97) to Glenfield Park

Improvement Types: Shared-Use Path, Driveway Aprons

Priority: Medium Timeframe: Mid-term Cost: \$\$\$\$

Along MD 182 NB, it is proposed that the outside NB auxiliary lane be converted to a bike lane, buffer, and shared use path from MD 97 to Glenfield Park. These improvements would provide an important connection between area destinations including Glenmont Metro, Glenmont Shopping Center, Glenfield Park, Saddlebrook Park, and residential neighborhoods.

For the MD 182 NB improvements, next steps include traffic counts and a traffic study to justify the conversion of the outside NB lane. The project would also need to be coordinated with the SHA and community stakeholders. Other steps include topographic survey, soils investigation, storm water management, and erosion & sediment control permits.

@ Glenallan Avenue

Improvement Type: Curb ramps, Median Refuge, Bike Box, Signing & Marking

Priority: High Timeframe: Short-term Cost: \$

Note: At the time of this writing, it was observed that the signal at this intersection was being reconstructed.

The intersection of Glenallan Avenue and MD 182 currently has APS/CPS with one curb ramp. Along with this curb ramp, a median refuge should be provided along the south leg of MD 182. The construction of this project would need to be coordinated with the SHA.

A bike box is also proposed on the west leg of Glenallan Avenue to assist bicyclists transitioning from the proposed cycle track to bike lanes on MD 182 NB.



@ Greenery Lane / Glenmont Metro entrance

Improvement Type: Pedestrian Actuated Signal, Curb ramps, Signing & Marking

Priority: High Timeframe: Short-term Cost: \$\$\$

A high volume of uncontrolled pedestrian crossings was observed at the intersection of MD 182 and Greenery Lane/Glenmont Metro entrance. This intersection is the best candidate for a pedestrian signal because there are no left-turn maneuvers onto MD 182 from Greenery Lane or the metro entrance. However, the MD 182 northbound and southbound roadways are vertically bifurcated with approximately 1' – 2' vertical separation. Additional push buttons and a ramp running along the median at a slope no greater than 12:1 would be necessary to make the crossing ADA-compliant. A short staircase could be installed in the median for pedestrians to bypass the ramp.

This improvement would necessitate new crosswalk markings and curb ramps. This project would need to be coordinated with the SHA. Next steps include traffic counts and a traffic signal warrant study.

@ Glenmont Rail Yard entrance

Improvement Type: Median refuge, Curb ramps, Signing & Marking

Priority: High Timeframe: Short-term Cost: \$

The intersection of MD 182 and Glenmont Rail Yard crosswalk should be re-aligned, re-stripped and improved with a median refuge and curb ramps. This project would need to be coordinated with the SHA.

@ Briggs Road

Improvement Type: Curb ramps

Priority: High Timeframe: Short-term Cost: \$

Note: At the time of this writing, it was observed that the signal at this intersection was being reconstructed.

The intersection of Briggs Road and MD 182 currently has APS/CPS, and anticipates that two of the curb ramps will be reconstructed. Along with these curb ramp upgrades, one crosswalk should be re-stripped. This project would be coordinated with the SHA.

Livingston Street

From Randolph Road to Flack Street

Improvement Type: *Sharrow Markings, Signing*

Priority: *High* **Timeframe:** *Short-term* **Cost:** *\$*

Livingston Street is designated as a shared roadway in the 2013 Glenmont Sector Plan. However, there is no signing and marking to indicate this designation.

Livingston Street should be improved with “Bicycle May Use Full Lane” and “Bicycle Route” signing. Sharrow markings should be located immediately after intersections and spaced at 250’ intervals thereafter. Livingston Street is a 25-ft wide roadway; however, parked cars create a natural traffic calming effect. Sharrow markings should be placed within the middle of the roadway, or a minimum 11 feet from the face of curb. Opposing markings should be staggered and slightly offset to their respective sides of the roadway.

Improvement Type: *Traffic Calming Islands*

Priority: *Low* **Timeframe:** *Short-term* **Cost:** *\$*

Livingston Street is a narrow roadway at 25-ft wide. Therefore, installing curb extensions is not recommended. However, small traffic calming islands could be installed at intersections to promote slower speeds.

Randolph Road

From Denley Road to Glenallan Ave

Improvement Type: *Bike lane, Signing & Marking*

Priority: *Low* **Timeframe:** *Mid-term* **Cost:** *\$\$*

Implementation of a bicycle facility along Randolph Road could be accomplished by converting the outside lane from off-peak parking only to full-time parking with 5-ft bike lanes. The re-striping could be incorporated into a resurfacing project. This project would require traffic counts and traffic study. Improvements should also be coordinated with the Bus Rapid Transit Study and the SHA MD 97 & Randolph Road grade separation project.

@ Glenallan Avenue

Improvement Type: *Lighting*

Priority: *Medium* **Timeframe:** *Short-term* **Cost:** *\$\$*

Currently, lighting is only provided on the south half of this intersection. However, there are cross walks on all legs.



@ Livingston Road

Improvement Type: Signal

Priority: Medium Timeframe: Mid-term Cost: \$\$

Note: There is currently a traffic signal warrant study in progress for this intersection.

The intersection of Livingston Road and Randolph Road is currently unsignalized. There is an uncontrolled crosswalk protected by median refuge, signing, and marking. It is recommended that this intersection be studied for the installation of a signal, as Livingston Road is designated as a shared roadway / bicycle route. The proposed crossing would require a new crosswalk and curb ramps. This project would need to be coordinated with MCDOT.

Urbana Drive

From Denley Road to Flack Street

Improvement Type: Sharrow markings, Signing

Priority: High Timeframe: Short-term Cost: \$

It is recommended that Urbana Drive be improved with “Bicycle May Use Full Lane” and “Bicycle Route” signing. Sharrow markings should be located immediately after intersections and spaced at 250’ intervals thereafter. Urbana Drive is a 25-ft wide roadway and parked cars create a natural traffic calming effect. Sharrow markings should be placed within the middle of the roadway, or a minimum of 11 feet from the face of curb. Opposing markings should be staggered and slightly offset to the marking on the opposite side of the roadway.

From Flack Street to Georgia Avenue (MD 97)

Improvement Type: Cycle Track

Priority: High Timeframe: Short-term Cost: \$

A cycle track is proposed along Urbana Drive from Flack Street to MD 97. The intersection of MD 97 and Urbana Drive is currently right-in, right-out and opposed by the Glenmont Metro station bus loop entrance. This stretch of road represents an important final leg for pedestrians and bicycles heading towards the station and Glenmont Greenway. The westbound lane of Urbana Drive could be converted to a two-way cycle track. Residential traffic previously using the right-out would be redirected to the intersection with MD 97 and Judson Road.

Next steps include traffic counts, traffic study, and public outreach.

@ Denley Road, @ Sheraton Street

Improvement Type: Curb ramp, Curb Extensions

Priority: High

Timeframe: Short-term

Cost: \$\$

One new curb ramp is recommended on the west leg of Urbana Drive and Sheraton Street. Two curb extensions are recommended at the intersection of Urbana Drive and Sheraton Street. Curb extensions will calm traffic and reduce crosswalk distance, promoting a more walkable community. The curb extensions should include storm water management features such as bioretention and should also be designed so as not to trap storm water flow from the gutter. Curb extensions should be designed to accommodate an AASHTO SU-40 design vehicle (fire truck). Next steps include survey, soil borings/infiltration testing, and landscape design.

Weller Road

From Holdridge Road to Briggs Road

Improvement Type: Sharrow markings, Signing, Sidewalk

Priority: High

Timeframe: Short-term

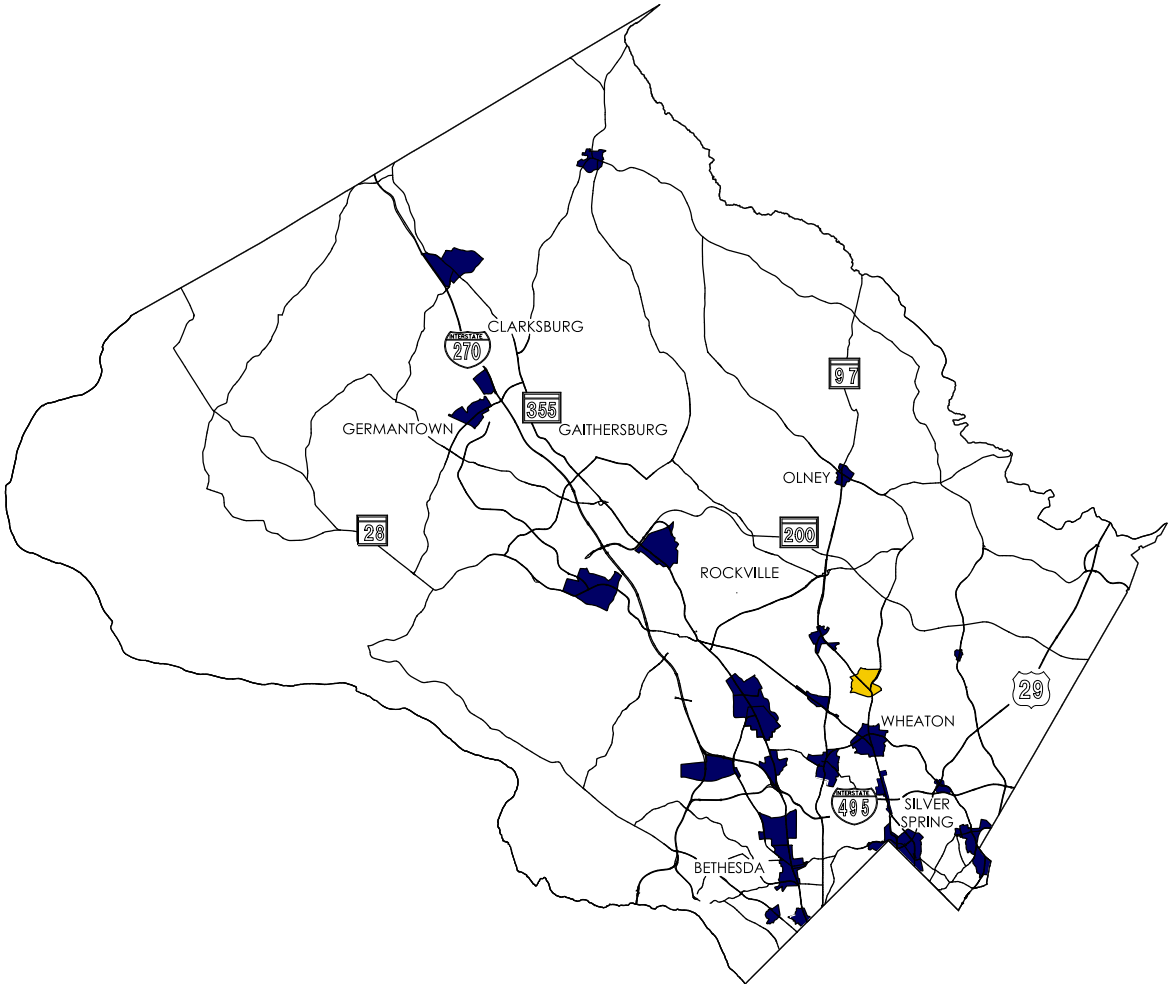
Cost: \$\$

It is recommended that Weller Road be improved with "Bicycle May Use Full Lane" and "Bicycle Route" signing. Sharrow markings should be located immediately after intersections and spaced at 250' intervals thereafter. Weller Road is a 25-ft wide roadway; however, parked cars create a natural traffic calming effect. Sharrow markings should be placed within the middle of the roadway, or a minimum of 11 feet from the face of curb. Opposing markings should be staggered and slightly offset to the markings on the opposite side of the roadway.

Currently, there are no sidewalks along Weller Road. However, there is existing right-of-way width to accommodate a 4-ft wide sidewalk. A sidewalk is recommended along the south side of Weller Road and will provide connectivity with the proposed sidewalk on Briggs Road and proposed pedestrian signal at MD 97 & Weller Road.

Glenmont

Conclusion



Conclusion



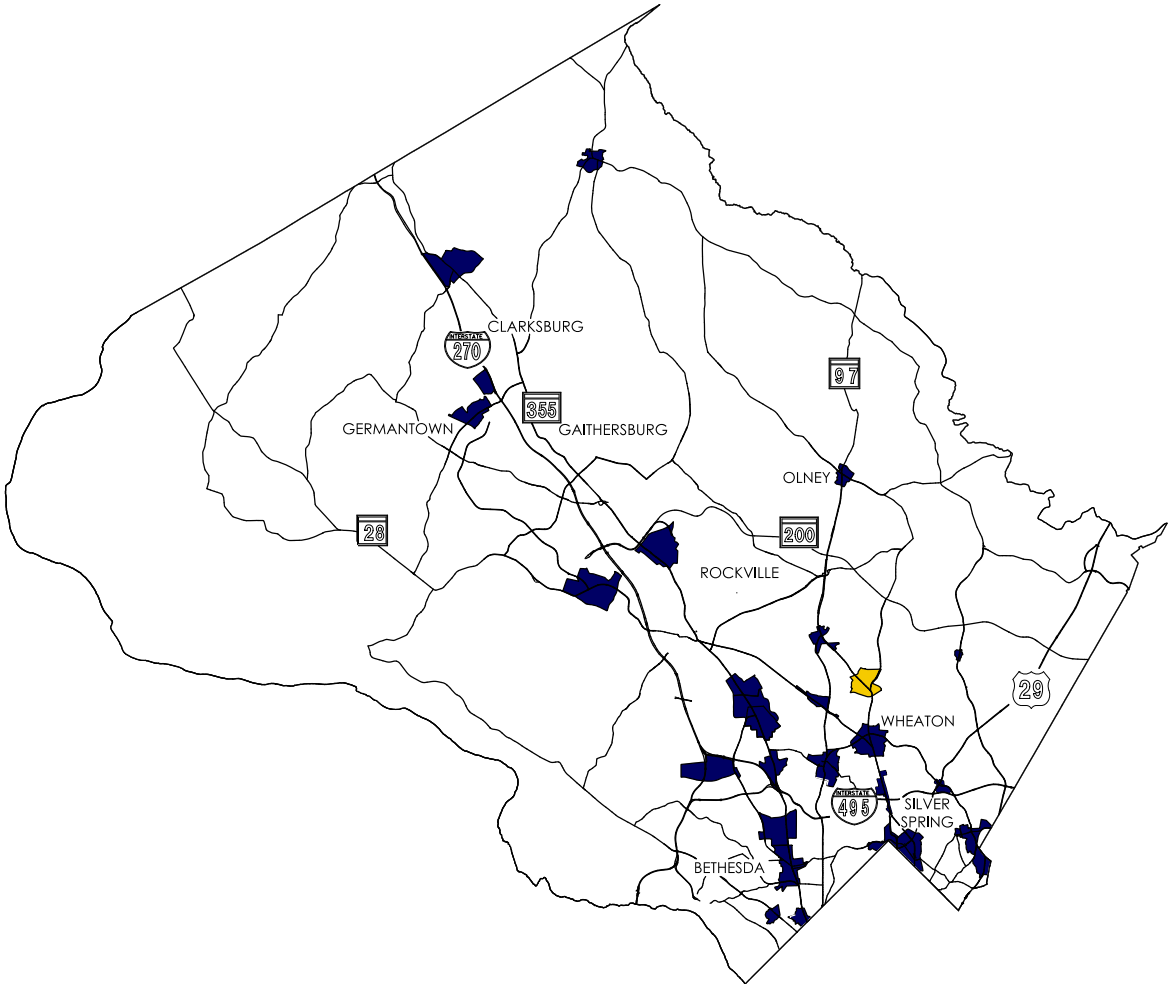
CONCLUSION

As is the case with the majority of suburban areas, the present day conditions in the Glenmont BiPPA primarily accommodates automobiles. However, the area has the potential to be a moderately to highly walkable and bikeable community. With redevelopment potential for the Glenmont Shopping Center, a centrally located metro station, many wide residential streets, a well-connected network of existing sidewalks, and recreational points of interest, it would take only a few well-placed improvements to boost connectivity. One or two “cornerstone” improvements should be prioritized for short-term implementation. Accordingly, improvements that connect with the Glenmont Metro Station and/or Glenmont Shopping Center should be given the highest consideration. Targeted engagement of the residential and commercial development communities in Glenmont should also be made a priority in the short-term to further define the area’s priorities.

There is no shortage of opportunities to upgrade infrastructure to current standards. The best strategy to achieve short-term results will be to undertake improvements that require little to no excavation, are located in Montgomery County right-of-way, and have established funding sources. This primarily includes signing & marking, curb ramps, APS/CPS, median refuge, curb extensions, and driveway aprons.

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References



References





REFERENCES

1. Accessibility Policy and Guidelines for Pedestrian Facilities along State Highways, Maryland State Highway Administration, June 2010.
2. Bicycle Policy and Design Guidelines, Maryland State Highway Administration, January 2015.
3. Guide for the Development of Bicycle Facilities, American Association of Highway and Transportation Officials, Fourth Edition, 2014.
4. Manual for Uniform Traffic Control Devices (Maryland version), Federal Highway Administration, 2009 Edition.
5. Urban Bikeway Design Guide, National Association of City Transportation Officials, Second Edition, 2014.
6. Urban Street Design Guide, National Association of City Transportation Officials, 2013.